Log System for IT Support

by

Nurul`Ain Binti Ahmad Zhaki

Dissertation submitted in partial fulfillment of
the requirements for the
Bachelor of Technology (Hons)
(Information Technology)

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CERTIFICATION OF APPROVAL

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A project dissertation submitted to the
Information Technology Programme
Universiti Teknologi PETRONAS
in partial fulfillment of the requirement for the
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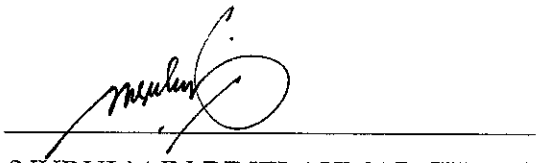
Approved by,

(Miss Eliza Mazmee Mazlan)

UNIVERSITI TEKNOLOGI PETRONAS
TRONOH, PERAK
June 2004

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.



(NURUL`AIN BINTI AHMAD ZHAKI)

ABSTRACT

The purpose of proceeding this project; Log System for IT Support, is to act as an online system that can be accessed by any IT client. This system provides remote support services, online reporting and manages users' complaint systematically. It was clearly noted that 'IT support field' should be seriously in concern, since it is the compliment element toward the growth of IT. Without the existing of variety support system in place, the process of IT support operation will not be balanced to support the IT growth demand. From this project, it will proceed with the idea of developing **Log System for IT Support**, with an extra enhancement from the existing system in market currently. This enhancement will concern on the solution of how it can help the management side of IT provider (that offers this support services) in managing the daily support. The end product is able to assign IT personnel automatically from the report received, act and respond promptly to every type of user's request, view management report and manage the daily support operation systematically in one central system. The methodology that was designed to fit this 14 weeks duration was **Planning** (cover all the preliminary phases), **Analysis** (detailed out the groundwork findings), **Design** (interface, system and data design), **Prototyping & Testing** (prototyping development and testing) and lastly end up with **FYP Presentation**. All in all, the systems groundwork was started with research, questionnaire and study the existing system, that really support into the idea of this enhancement. It is hoped that, the system produced will act as a system that benefit both users and support provider, in order to have the best IT support services with not only just a pure online-reporting system.

ACKNOWLEDGEMENT

The assistance and encouragement of many people are normally required in completing this Final Year Project. I could not done all this without the help and encouragement from them, whether directly or indirectly.

First and foremost, this appreciation goes to my family who support me much. Their love and care really strengthen me to accomplish all this.

This appreciation also goes to all important people in IT/ IS Department. All this will be impossible without them; to Mr Shuib, Mrs Vivian and all of my IT/ IS lecturers. Special thanks to my supervisor; Miss Eliza Mazmee Mazlan, thank you for your kindness, support, guidance and encouragement along the way.

And the most important is, to all people in Universiti Teknologi PETRONAS. Thank you for providing me a warm and conducive place to learn and to complete this project. A lot of thanks go to all the final year friends, UTP Library, UTP Staff, UTP Lab Assistants and to all people from my previous Industrial Training Host Company (INSTEP). To others, it would be virtually impossible to list each person here, but, all that I can say is thank you.

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CHAPTER 1
INTRODUCTION

1.1 Background Of Study

The world today is already being in information overload zone with the tremendous increasing number of cyber community. Information technology is the enabler of this cyber community and people are the key factor to let this new type of community survives. It is an absolute idea for an ongoing support between this two related entities; enabler and key factor. Therefore, it was totally relevant to come out with a solution that can accommodate with all this support activities, to ensure the constant supply and health growth of this IT field, which maximize the satisfaction of IT services used.

The project was aim to come out with a product that can supply to the growth of IT in the aspect of IT support field. This system will provide customized support solutions to multiple market segments, covered all types of IT users, regardless of boundary and regardless type of IT support area. As of that, this system should establish in place to handle all faults recording, action taken to accommodate user complaint, and data for the management record itself.

All in all, the very basic root word to trigger the study of this project is; IT services is already in place and keep on evolving time by time. What we are waiting for is the existence of certain group of people that keep on concentrating on taking care of this field, and maintain the operation of this field, which is IT support area. Therefore, it is totally relevant to have and to produce variety of enhancement for IT support system type as to compliment each other.

1.2 Problem Statement

1.2.1 Problem Identification

As this IT field grows, it is most probably that the support volumes will increase too. This proposed **Log System for IT Support** will be one of the compliment solutions to supply this moving-towards-complex environment. IT field is keep on evolving, therefore it rates high priority demand for the existence of support service to maintain this evolution.

To accommodate this complexity, there should be a system in place that can manage the performance of IT services, users' complaint and feedback, and also the way to handle the support operation in one central system. This is to ensure the ongoing of high quality IT services provided in place.

So, this project will try to answer the best way of managing IT support area and handling all the report and complaint by IT users, to ensure both side can deal with the maximum satisfaction of IT services.

1.2.2 Significant Of The Project

This system should be viewed as a total solution aim to improve the IT support service area, beside saving time and money, in this on-going IT support environment. From the preliminary study done to various sources either locally or globally, there are a lot of convincing facts that trigger the idea to proceed with this project Log System for IT Support. It was detailed out as below:

Supply the growth of IT in the aspect of IT support

With the growth of IT field, it will directly supply to the increasing number of support volumes required. If there is no system provided in place, managing this increase could become impossible and hard. This will reflect the bad reputation

for IT services provided and to the IT growth itself. Therefore, this Log System for IT Support really contributes a significant sign towards the efficient growth of this IT field. It happened to both side; for the sake of IT provider and for the sake of IT users.

Supply the bigger need of IT usage by enhancing the maintenance demand

This Log System for IT Support will be the compliment elements to supply the bigger need of IT users, as the result from increasing pace of life and technological changes. IT products and other IT systems are becoming more complex. Therefore the need for support is continually growing, and the help desk or support system is going to become more in demand with the various capabilities and features.

Improve the quality of support management services

Customers expect courteous support from experienced team. As well, utilizing fast and accurate online remote repair technologies. This Log System for IT Support will be enable to suit all the needs since it can be updated frequently, and easier for IT support management to entertain their complaint request personally by each personal customer reporting account. It also can manage the planning of personnel task distribution, and cater the issues of personnel workload at one time.

Reduce onsite and replacement on IT services claims

Most previous IT support was solves through phone call, which actually performs only basic area of troubleshooting. And as a result, it is only able to fix basic problems. Unresolved issues are then routed for hardware replacement or onsite repair. Therefore, it is significant to have this Log System for IT Support that not only provide support services, but also should be able to educate and teach users on this IT field. It was included in the package of User Info Section, FAQ Section, and also allow user to send query about their personal computing problem.

Reduce call and reporting volume from an old version reporting system

With the old system currently which mostly implement onsite support and paper-base reporting form, claims done usually result in numerous repeat calls and report form, submit from customers. This repetition was due to; check on the status of the call, attempting to reschedule, inquiring about the status of the technician, and complaining that on-site repair did not solve the problem. Therefore, whenever the Log System for IT Support is already in place, it will simplify the work and providing the users with only the necessary information and reference point, to eliminate these calls and redundant submission form.

Adapting the continuous changes

Adapting to change is totally relevant in this terrific field of IT to make sure the environment will contain the latest IT issues. Implementing this adaptive help desk and support system, will allow IT services to change more rapidly, towards supporting new ways of doing IT business.

1.3 Objectives And Scope Of Study

1.3.1 The Relevancy Of The Project

To provide a Log System for IT Support that can act as IT support solution to connect the IT service provider and IT users.

For IT Support Management/ IT Support System Administrator

1) Central point to control, track and manage the whole support operation.

- System to stores all information, reports, complaint submit on a problem in the one central system
- System to assign the right staff in right specialize support area, for action taken to each complaint received

- System to process, check and update on the tasks completion and status
- System with built in notification to automatically notify assigned staff for any new task assigned to them, any prompt notification or alert attention

2) Evaluate quality of service performance and management.

- System to generate statistical and graphical reports (for report comparison in timely manner), to allow management access and monitor the performance of the IT services delivered heading in the right direction
- System to access users feedback, satisfaction and level of understanding of their customers

For IT Users

3) Repository for everyone to find solutions to problems

- Replace paper-based report and phone call report, with 24x7 online reporting capabilities
- Educate users with IT support knowledge (through eInfo Section, FAQ Section etc). Resources are provided so, users can send personal query, find solutions to problems, allow for self solving problem, do own searches to find solutions to their problems, thus eliminating the need for them to log a phone call
- Update status of report/ complaint submitted previously

1.3.2 Target Users

This Log System for IT Support is customizable to suit into any organization that offer support provider globally.

Environment :

IT Product Support globally and does not limit to only specific office environment usage. The environment should reflect the existence of;

- a group of people that offer a list of support services
- to a group of people that need support services.

User Group 1 :

IT Support Management/ IT Support System Administrator from any support-based organization, that provide the support services. This group will handle the operation remotely from one place as base/ office.

User Group 2 :

IT Users that are located globally. This group can access this web-support services through internet and searching for support services, guideline or references.

1.3.3 Feasibility Of The Project Within The Scope And Time Frame

The study was initiated with the aim to provide the best of IT support management services to both IT users and IT providers. This system was proposed as a compliment of currently available support system or help desk software available in the market. Therefore, it is not such a hard way to study the groundwork of this area, since all the sources (materials, previous research papers, current similar systems), are already available along the way. This proves the feasibility to proceed with this project.

This Log System for IT Support will come out with an extra concern on maintenance and management of control system rather than a purely reporting help desk system. This will be the add-on enhancement that comes in extra together within this project. Therefore, this system tries to come out with these differences from the existing similar system available in the market.

The add-on enhancements that give extra differences, was stated clearly in the objectives. It covers, system that manipulates the data, uses the analysis to prompt the

support management action plan, and resulted in statistical and graph report. All in all, it will act as pre-intelligent support tool for managing the operation.

From the study done, to come out with this Log System for IT Support add on with the new enhancements as listed, it is a possible effort and can be managed within this 14 weeks time. This is due to the scope of study that had been clearly stated, which is; (1) to develop a system closely similar in the existing market; meaning that no consumption of a lot of time and effort to start from the base or zero, and (2) to add-on enhancements that focus on managing the support operation for the sake of IT support management.

CHAPTER 2
LITERATURE REVIEW AND/OR THEORY

There are a lot of data and references from the world outside, found from the study done, that inspired towards completing this project. This includes the supportive global feedback towards the similar support system that already available from the net, from paper of researchers and intellectual group. The significant of this project can be seen from many aspects.

2.1 From similar support system currently available in the market

A lot of similar support system in the market outside proves that how this system already located in highest rank of IT support team choice. Moreover, well known IT provider like DELL, Compaq, IBM, Apple etc, also provide their own support online access for the sake of their client. Up to that extent, a free support center, support consultancy and many more online support teams were growth together in this industry to compliment each other.

According to the feedback given to one example of support system in the market outside, it is said that;

*"... On-Line Support has **vaulted to the forefront of the Customer Relationship Management (CRM) solutions industry** by providing world-renowned customer, call center, & technical support services to the global business community.*

*...able to achieve this by embracing this basic truth – the success of any business depends on its ability to **deliver excellent customer relationship management**.*

... On-Line Support knows that branding isn't simply about how you look in the marketplace. Rather, and more importantly, it's about your ***relationship with your customer, their experience – from pre-contact to follow-up.***

... Simply put, your success is our success – we are ***people helping people****. We have literally no limits to providing friendly, efficient, and quality customer care and want your customers to applaud you for it repeatedly and loudly."*

(On-Line Support, Charlottetown, Canada, 2003)

2.2 From the research paper that relate to this support issues

Furthermore, there is a lot of research paper that detail out how it is an absolute effort to trigger any solution that can contribute towards the growth of this IT overloaded world. This includes the idea of contributing to this growth in facet of support element.

From the research paper "**System Management & Support: LOG provides a dedicated help desk system which comprises all technical facilities and measures to support the user**", presented to dissertation committee; Dr. Starr Roxanne Hiltz (Advisor, NJIT), Dr. Marilyn Tremaine (NJIT), Dr. Il Im (NJIT), Dr. Brook Wu (NJIT), Dr. Loren Terveen (University of Minnesota);

"...With the development of computer technology and the spread of the Internet, a new form of community came into being in the last decade – online communities.
...Computer technology and the Internet are the enablers of this new type of community, people are the key factor to let this new type of community survive.
...From the purpose of the community, we can categorize online communities into the following types (from http://www.fullcirc.com/community/communitytypes.htm):

- *Collaborative workgroups, family groups, social space, role playing*
- *Space for primarily face-to-face groups*

- *Ethnic groups, Professional groups, Intellectual discussion groups, special interest groups*
- ***Illness support groups***
- ***Software support***
- *Creative groups sharing techniques and work"*

(Yi Zhang, Dec. 10th 2002)

2.3 From personal opinion of intellectual group

There is also a lot of personal intellectual opinion, gathered from selected people all over the world. Most of the ideas are towards a fully-agreed of the variety growth support system or advance helpdesk system that really compliment the elements of IT services provided:

".. ability to quickly and accurately diagnose and correct our Customers' problems has ***allowed us to concentrate our efforts on other areas of the business, with complete confidence that our customers' support needs are being met.***"
(Keven Swingle, Socantel, October 2003)

"Provide Customer Care solutions in creating awareness; we have experienced tremendous growth... Behind the scenes the convergence of people, process and technology drive solutions and innovation, but on the surface this industry is about ***'People helping People'.*** "
(Ross Beattie, President On-Line Support Inc, 2003)

"We have been very pleased with the diversity and quality of services that OnLine Support has provided us. Your state of the art solutions have made you an ***invaluable partner in our efforts*** *to be among the industry leaders in fully integrated outsourced communication services and solutions..."*
(Michael J. Klein, CEO, Xcellacom Corporation, October 2003)

".. ***'on-line life-savers'.*** *Both were helpful, resourceful and creative in their approach to this customer.*

... This is essential in a business atmosphere as we are the customers' seeking aid."

(D. Simpson, May 21, 2001)

From the partial review presented above, over the many facts and findings gathered before in the preliminary study, it provides the answer as; a totally relevant issues to come out with this solution within the right time.

Many of **currently available support system** in the market showed how feedback from both IT users and IT provider, list the highest rank of need. It also reflect that the existing of this support system really smoothen the support activity for both sides.

Meantime, from one of the **research paper** on "System Management & Support: LOG provides a dedicated help desk system which comprises all technical facilities and measures to support the user", also conclude how the evolution of cyber community required the support group to maintain and support this process constantly.

Moreover, when it turned to **personal intellectual opinion**, the says also support the fact of how support activities do compliment this growth and also increase the spirit to growth, whenever there is a system in place that do this taking care process.

CHAPTER 3
METHODOLOGY/ PROJECT WORK

3.1 Procedure Identification

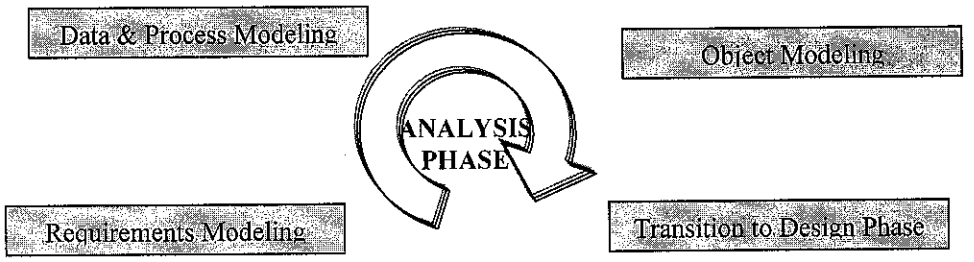
The methodology is designed to fit 14 weeks timeframe, was segmented into 5 phase; Planning, Analysis, Design, Prototyping & Testing, and FYP Presentation.

Phase 1 : PLANNING

i. FYP Title approval for FYP Committee
ii. Completing fact finding & information gathering process
   - Data gathered through the use of questionnaire (to a group of sample population), internet surfing (for various sources of literature review and research paper on the similar area), study the same model and system (Intel support, IBM support, Compaq support and HP support page).
iii. Doing Preliminary Study
   - Begin with understand the problem and opportunity of the selected area which is IT support area.
   - Define the project scope & constraint in term of time, cost and facilities towards completing the end product.
   - Determining the feasibility of the whole project to be completed within the time frame, to ensure that the area is possible to be finished by the presentation date.
   - Preparing the project schedule (Refer Appendix 1).
iv. Completing the Preliminary Report and to be submitted to the supervisor for approval

Phase 2 : ANALYSIS

Significant : to develop a logical, business oriented model of the Log System for IT Support.



i. Requirements Modeling
   - Overview: do the fact finding, research and observation; through system requirement checklist (Refer Appendix 2) and questionnaire (Refer Appendix 3); and come out with the model.
   - Significant: to represent information system from user's viewpoint.
   - Technique chose for Log System for IT Support requirement modeling:

     Functional Decomposition Diagram (FDD)

ii. Data and process modeling
   - Overview: produce DFD, context diagram and data dictionary.
   - Significant: as extend to create a visual model of the information system - show how data moves through, but does not show program logic or processing steps.
   - For system data & process modeling, **DFD** is used that consist of:

     a. Context Diagram
     b. Level 0
     c. Child Diagram

iii. Object modeling
   - Significant: to describe object-oriented systems
   - For Log System for IT Support object modeling, UML used were:

     a. Use Case Diagram
     b. Class Diagram

Phase 3 : DESIGN

Significant: to detail out the physical design of the system that answered all the requirement issued in the previous requirement phase.

i. System design

a. User Interface Design

Area covered in designing and producing user interface:

- Human Computer Interaction (HCI) aspects
- User Centered Principle aspect
- Ergonomics, Aesthetics and Interface Technology aspect

b. Input Design

Area covered and taking into consideration while considering input design:

- Objective to be achieved
- Suitable Input and Data Entry Method
- Reduce Input Volume
- Design Attractive Data Entry Screens
- Use Validation Check to Reduce Input Error
- Source Documents
- Effective Input Control

c. Output Design

Area covered while designing for the output:

- determining type of output possible to be generated by the system

ii. Data design

a. Data Design Concept

- Database Management System (DBMS)

b. Database Model

- Log System for IT Support database :
  Microsoft Access using SQL language.
- Database Model practiced throughout prototyping: Relational Model

Phase 4 : PROTOTYPING & TESTING

i. Prototyping
   - completing the prototyping of Log System for IT Support based on all the undergo Preliminary, Analysis & Design Phases completed.

ii. System Testing
   a. Developer Testing
      - testing on interface linkage
      - testing on database retrieval
      - testing on data validation
      - testing on navigation of the system as a whole
   b. User Testing
      - conducting user acceptance testing (Refer Appendix 13)

iii. Final Review
   - last check up before FYP presentation, in term of entertaining the reviews received during the system testing, and do the last touch up.

Phase 5 : FYP PRESENTATION

i. Oral presentation on week 13 (27^{th} April – 01^{st} May 2004)
ii. Project Dissertation Submission : 01^{st} June – 05^{th} June 2004

3.2 Tool (equipment, hardware etc) Required

i. System Development
   - Macromedia Dreamweaver
   - ASP Scripting (Server Side Scripting)
   - Host PC with IIS Server

ii. Database
   - SQL Database with Microsoft Access

iii. Programming/ Scripting Language
   - ASP Scripting
   - XHTML, JavaScript, XML, Java

iv. Others
   - Macromedia Flash
   - Adobe Photoshop
   - Microsoft Project

CHAPTER 4
RESULTS AND DISCUSSION

From the very detail study done, this project will end up with a product of Log System for IT Support.

As a whole, it will be a system for a fault logging software application and managing all the support operation. It was not just a simple help desk, but to that extend will provide more user friendly support system, with fault log reports for management, provided in a graphical and standard format. Both IT provider and IT user can have an efficient linkage to deal with this matter, heading the path towards accomplishing the highest satisfaction's degree of IT services.

With this Log System for IT Support it is hope to minimize the hassles associated with managing IT support while reducing overall technology costs. This comprehensive suite of support system was designed specifically to handle essential day-to-day IT management and support, whether it needs to be in stand alone condition and as well as an extensive range of online users that need in remote network technology.

4.1 Analysis Phase

As the output from this phase, three aspects of modeling had been prepared in detail:

4.1.1 Requirements Modeling

From the questionnaire feedback regarding to the online reporting system usage, it is proven that almost all figures from the sample population gave the positive feedback. This showed how majority of IT users had ready to move everything into online environment. IT Support Reporting through online method, provide a lot of advantages for them in term of time & cost saving, efficient complaint management and systematic update between users and support provider.

The feedback result was analyzed and defined into three types:

No	Description	Percentage
1	Online Reporting System (Report through online system)	80 %
2	Conventional Reporting System (Report through paper-based form or telephone call)	15 %
3	No comment	5 %

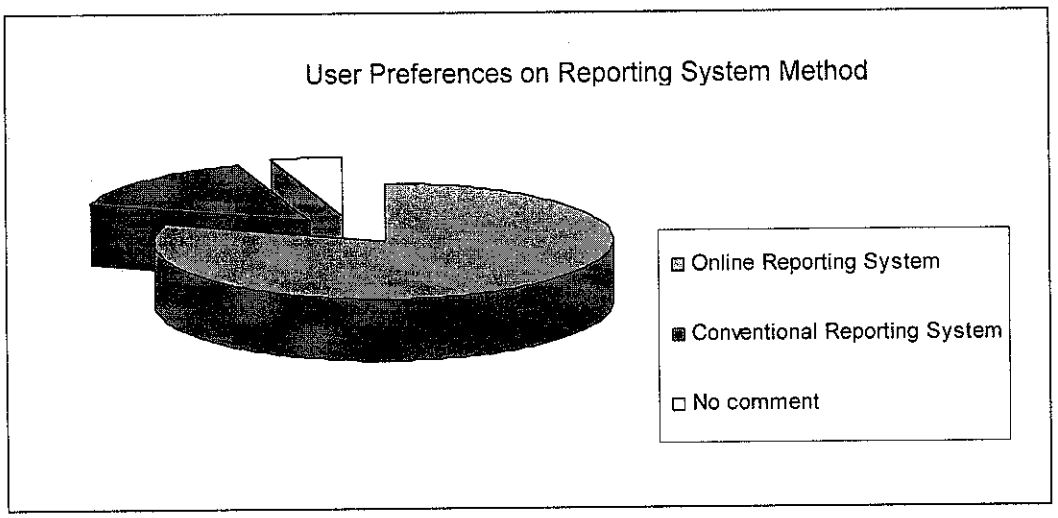


Figure 10 User Preferences on Reporting System Method

The use of FDD type was the most appropriate, since this system was a web-based application system, that require user to navigate the pages and subsystem it contain.

i. **Log System for IT Support FDD for Public Access** (Refer Appendix 4)
ii. **Log System for IT Support FDD for Authorized System Administrator** (Refer Appendix 5)

4.1.2 Data & Process Modeling

The complete DFD had been modeled, that covered the following:

i. **Context Diagram** (Refer Appendix 6)
ii. **Level 0** (Refer Appendix 7)
iii. **Child Diagram** (Refer Appendix 8)
   - Diagram 1 DFD for Request Page
   - Diagram 2 DFD for Update Content Page
   - Diagram 3 DFD for Perform Query Page
   - Diagram 4 DFD for Match the Request Database Page
   - Diagram 5 DFD for User Log in Page

4.1.3 Object Modeling

The object modeling technique that had been produced were:

i. **Use Case Diagram** (Refer Appendix 9)
ii. **Class Diagram** (Refer Appendix 10)

4.2 Design Phase

This phase was detailed out the physical design of the system that answered all the requirement issued in the previous requirement phase. The results for this phase were presented in the proper segment.

4.2.1 System Design

i. User Interface Design

Log System for IT Support is a user-centered system that performs day-to-day operation. It deals with variety of mix in term of input, screen output and data queries. This task requires interaction with the computer system, and therefore the user interface is a logical starting point in this system design phase.

To perform this, it requires understanding of human computer interaction and user-centered design principle.

Human Computer Interaction -
Human Computer Interaction elements deal a lot with relationship of people and computer. As a user's concern, this Log System for IT Support will be able to receive user input, and display back the output request whether by screen display or printed report.

User Centered Principle -
The elements of User Centered Principle were concentrated while designing the Log System for IT Support to ensure all the supportive area was not left behind.

1. understand the underlying business function of Log System for IT Support
2. maximize graphical effectiveness
3. user profile of Log System for IT Support
4. think like being in Log System for IT Support user's position

5. use prototyping to visualize the idea
6. design a comprehensive Log System for IT Support interface
7. continue the feedback process from target audience
8. document the interface design

Ergonomics, Aesthetics and Interface Technology -

All in all, to maximize the good user interface of Log System for IT Support, that compliments all the elements of ergonomics, aesthetics and interface technology, were put into consideration. This part leads the way of:

1. focusing on basic objectives of Log System for IT Support requirement
2. building an interface that is easy to learn and use by user for Log System for IT Support
3. providing features that promote efficiency
4. providing easy way for users to obtain help or correct errors
5. minimizing input data problems by users of Log System for IT Support
6. providing feedback to users of Log System for IT Support
7. creating an attractive layout and design
8. using familiar term and image trough out designing this Log System for IT Support

ii. Input Design

The input design was aimed to achieve the specific objectives. These objectives were emphasizes along the way of this design process.

Objective	**Description**	**Log System Practice**
Suitable Input and Data Entry Method	Permit any input by the users of this Log System for IT Support. Usually source were	- Batch Input (currently). The report perform on a specific time schedule; daily, weekly or monthly, which is done by system administrator

	keyboard, internet work station, data collection device, touch screen etc. Method available were Batch Input, Online Input, Trade Offs etc.	
Reduce Input Volume	Aim to reduce or prevent any activities that lead to the use of huge volume. The good impact of it can be seen whenever the data capture and data entry decrease, the usage of time and effort reduce.	- Use code, - permit input of necessary data only, - provide answer to be chose.
Design Attractive Data Entry Screens	Maximize the efficiency and systematic way of data entry. Very important especially in 'form-filling' part.	- Point at insertion point where data need to be entered, - descriptive caption provided for every entrance, with field size mentioned, - sample of format data provided (like date: DD/MM/YY etc), - default value displayed to help user as a recommendation, - meaningful error message for unacceptable, and - allowed user action like; navigate page, add, change, delete, view, search.
Use Validation Check to Reduce Input	Aim to improve the quality. Whenever the error decrease, the quality	- Data validation was applied; - by testing the data entered: accepting valid entry or rejecting entry fail to

Error	increase.	meet specific condition.
Source Documents	Kind of form-layout; used in requesting and collecting input data, trigger or authorize an input action, and provide record of the original transaction.	Use form-layout have: - sufficient space to enter data, - clear instruction, - good data management, - easy to be understood and filled by user, - segmented by title etc.
Effective Input Control	Ensure the input was correct, complete and secure, in order to promote the accuracy and quality.	- Use the good form as in source documents.

iii. Output Design

Output design for system can range from various output sources. As technology keep on changing, the source was keep on variable, more efficient and faster.
Currently, the output design of Log System for IT Support was:

	Information Delivery Method	**System Administrator**	**User**
1	Internet Based Information Delivery	√	√
2	eMail	√	√
3	Printer	√	Optional
4	Screen	√	√
5	Audio	√	

4.2.2 Data Design

A properly design data can offer a solution for efficient file processing, data retrieval etc. All the data were designed to be kept properly in the well-designed database that should provide overall framework; aim to avoid data redundancy, support real time and dynamic data environment.

i. Data Design Concept

All in all, Log System for IT Support data design and database design were following the specification that should reflect the following criteria:

Database Management System (DBMS)
Interface between database and users that allow to access data, by following all the components of a DBMS (data manipulation language, data repository etc).

ii. Data Structure

Table name	Column name	Key type	Null/ unique	FK ref table	FK ref column	Data type	Length
System Administrator	admin_id	PK	Not null			Number	20
	admin_password		Not null			Varchar2	20
System Database	database_id	PK	Not null			Number	20
	database_name		Not null			Varchar2	20
	database_description		Not null			Varchar2	50
	database_volume					Varchar2	20
User	user_id	PK	Not null			Number	20
	user_name		Not null			Varchar2	20
	user_password		Not null			Varchar2	20
	address		Not null			Varchar2	50
	email		Not null			Varchar2	20
	contact_no		Not null			Number	10

admin.database	admin_id	PK	Not null			Number	20
	databse_id	PK	Not null			Number	20
database.user	database_id	PK	Not null			Number	20
	user_id	PK	Not null			Number	20

iii. Database Model

Log System for IT Support database :

Microsoft Access using SQL language.

Database Model practiced throughout the implementation process :

Relational Model.

4.3 Prototyping Phase

From the detail research undergo in Preliminary Phase, Analysis Phase and Design Phase, all the resultant was carried into Prototyping Phase in order to visualize the product.

4.3.1 Platform Used

i.	Web editing:	Macromedia Dreamweaver MX
ii.	Database System:	Microsoft Access
iii.	Scripting/ Programming Language:	ASP, XHTML, Javascript, SQL Language
iv.	Others:	Macromedia Flash MX, Adobe Photoshop

4.3.2 Process and sub-phase involve in Prototyping Completion

This phase consume a lot of time, effort and most of the work area from the overall 14-weeks timeframe given towards the completion. Throughout the implementation of this prototyping, sub-phases process involved can be recognized as follow:

i. Create the framework prototype
   - completing all the navigation pages associated within the system
   - most of the work deal with purely XHTML coding with static page

ii. Invent the ASP Coding
   - to turn the static page into user-interactive page (page that able to think)
   - it deals with user input, able update the session (date, time, counter) and respond promptly to users' activity

iii. Set up the database in Microsoft Access database
   - construct all the table involved with the data type setting and others

- ensure that the database needed is completed

iv. Invent the SQL Language on interface, to retrieve the database from the database, within the ASP interface

- deal with the data retrieval function from the database onto the interface to be viewed by end-user

v. Miscellaneous

- completing the finishing task in term of interface design, add-on announcement and text-based information in the page.
- add-on multimedia features to enhance the interactivity aspects; like advertisement and user site-map.

4.3.3 Log System for IT Support Screen Shot

The system was mainly divided into 5 sections:

No	Section	Authorization
i.	About Log System	Public
ii.	eInfo	
iii.	Services Offered	
iv.	eForm	Members Only
v.	System Administrator Control Page	Administrator Only

Log System for IT Support screen shot:

User Interface Design (Refer Appendix 11)

Input Design (Refer Appendix 12)

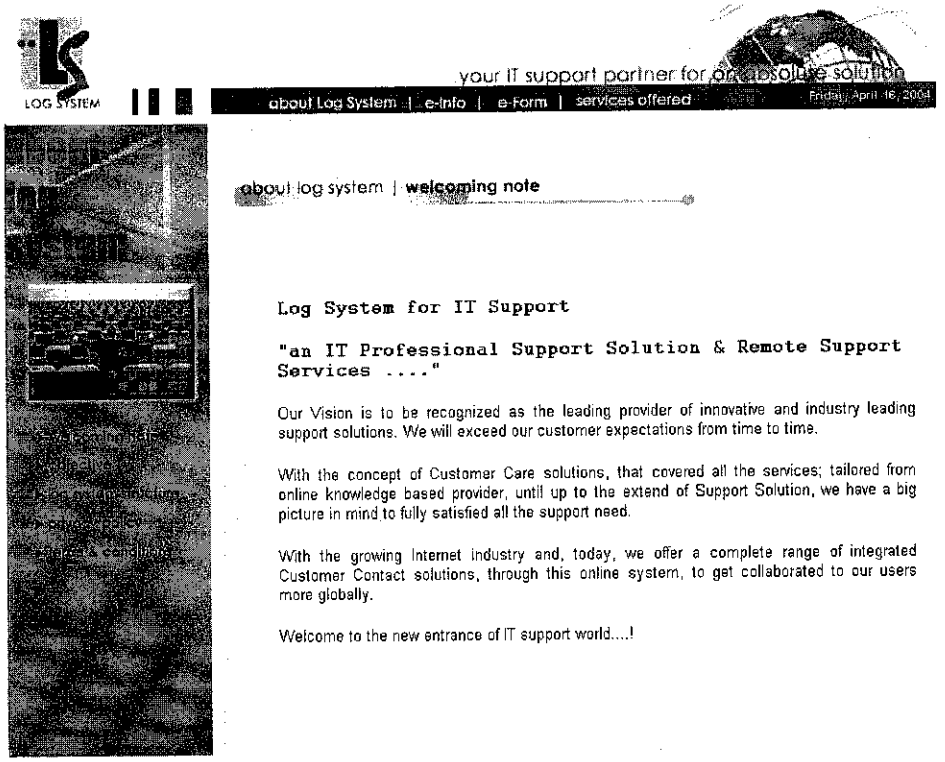


Figure 1 "About Log System" section page

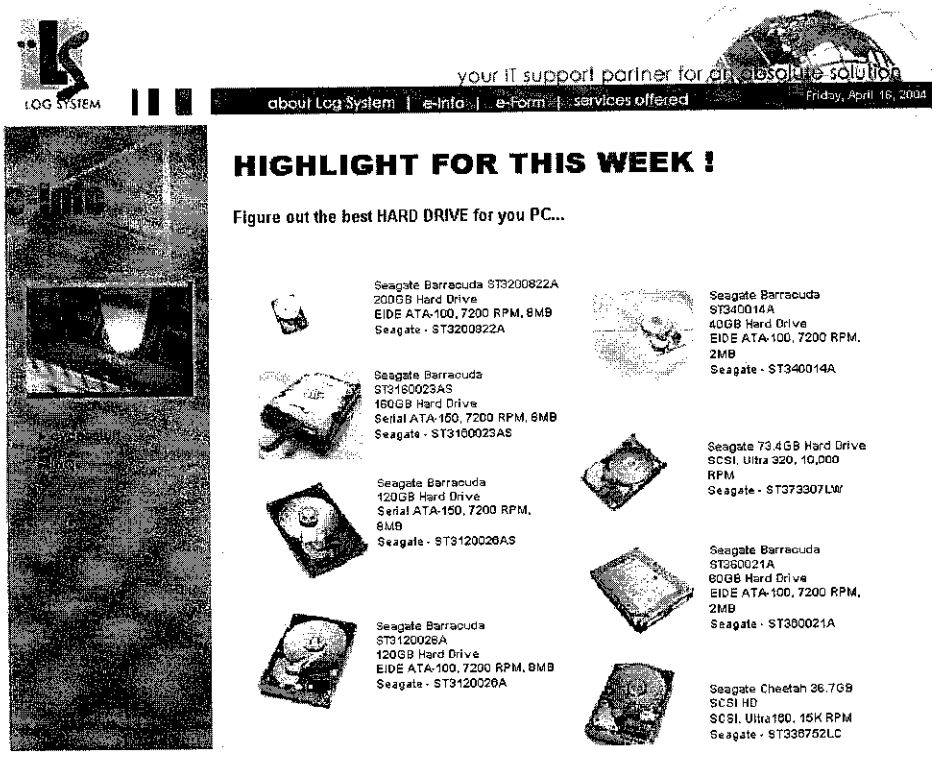


Figure 2 "eInfo" section page

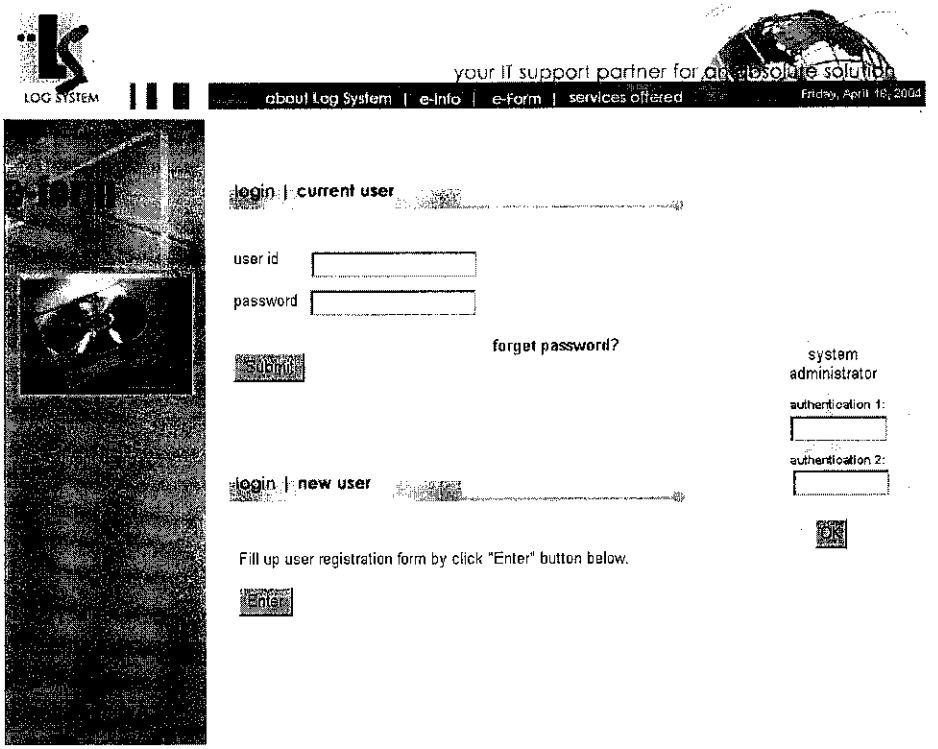


Figure 3 "eForm" section page

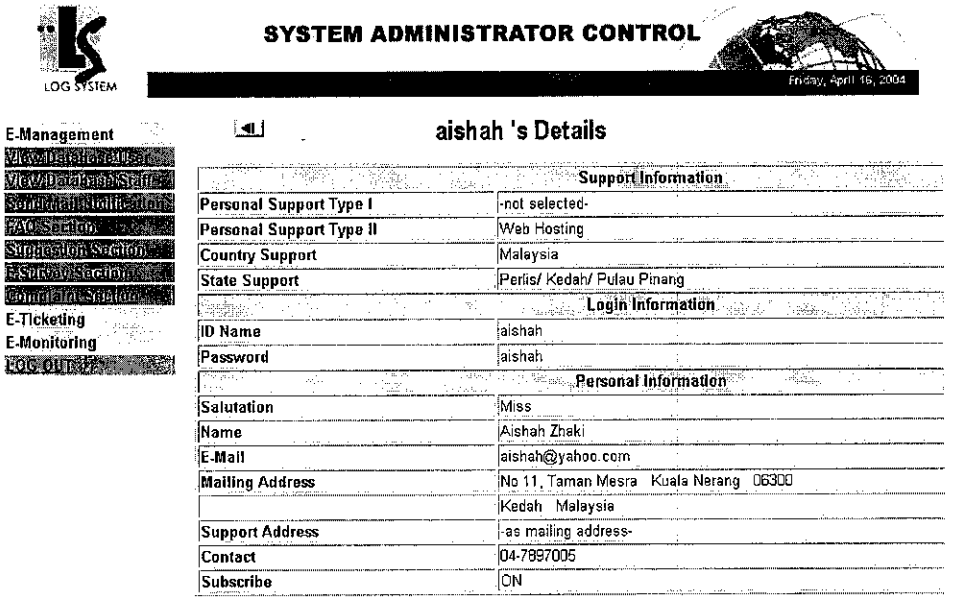


Figure 4 "System Administrator Control" section page

CHAPTER 5
CONCLUSION AND RECOMMENDATION

This Log System for IT Support is designed to supply the market niche, by offering technical support services to a number of people in this IT evolution decade. It offers a complete range of IT support solutions, tailored to each of client's request and complaints. In the meantime, it manages the IT support personnel to workout in solving all the support requested.

It is firmly believed that, whenever both users and providers issues are taking into concern within one solution system, it will absolutely covered the right ingredients for unprecedented growth of IT support system in demand.

This system is the answer to bridge the support provider and the users. From the prototyping done, it shows that the system is able to accommodate the support provider's need and also IT users need.

All the functions reflect the behavior of this system to be as a central point to control, track and manage the whole support operation. The system able to stores all information, assign the staff for action to be taken, process the complaint, and built in notification for any prompt action that required action alert by support provider.

This Log System for IT Support also able to evaluate quality of service performance and management; through statistical and graphical reports. It also access users feedback, satisfaction and level of understanding of their customers

For IT users, this Log System for IT Support gives the best as a repository for everyone to find solutions to problems. This enhanced by the features that replace paper-based report and phone call report, with 24x7 online reporting capabilities. It also educate users with IT support knowledge (through eInfo Section and FAQ Section). Users also can update status of complaint submitted previously, through this system.

Based on all the features available reflected in the prototyping of this Log System for IT Support, it showed the best on how this product stand in parallel with the objectives aim to be achieved.

Future recommendation

For the future concern, it is fully recommended that this system will be enhanced in timely manner. There should be no rework task that from the zero because this will only caused a lot of time taken to do the same thing, again and again. This can be tracked through the version released. It is to ensure its efficiency besides saving a lot of times and quickly answered to system upgrading.

In term of system output design, the system should be able to have the output like; Automated Facsimile. This is for the sake of the possibility to have IT customer from the background of big organization and corporate company. With this features, the system will be better more to interact with this type of IT users who seek for support services.

Furthermore, for the better interaction between users and support provider, the video conferencing technology should be able to be embedded together with this system. This is possible to start with the basic platform since currently there is 'C-U-See Me (See You See Me) technology' in place. This is a good start for video conferencing session since it only used small-monitor devices between two parties, IT users and support provider. The advanced technology can be embedded later on.

REFERENCES

Shelly/ Cahman/ Rosserblatt, 2001, ***Systems Analysis & Design 4th Edition,*** Course Technology

Ted Brockwood, 2002, ***Rescued by SQL,*** Onward Press

Mathew F.Raftree, 2002, ***MCSE Guide to Microsoft SQL Server 2000***

Dusan Petkovic, 2000, ***SQL Server 2000: SQL Beginners,*** McGraw Hill

Dave Marcer, 2001, ***ASP 3.0: A Beginner's Guide,*** McGraw Hill

Thomas Powell & Fritz Schneider, 2001, ***Javascript: the Complete Reference,*** McGraw Hill

Morgan Kaufmann, 1999, ***Joe Celko's SQL for smarties: Advance SQL Programming 2nd Edition,*** MK Morgan Kaufmann

Robert D Schneider, 1997, ***Microsoft SQL Server, Planning & Building a High Performance Database,*** Prentice Hall PTR

Rafe Colburn, 2000, ***Special Editor Using SQL,*** Que Corporation

Derek Ferguson, ***Troubleshooting for programmer,*** McGraw Hill

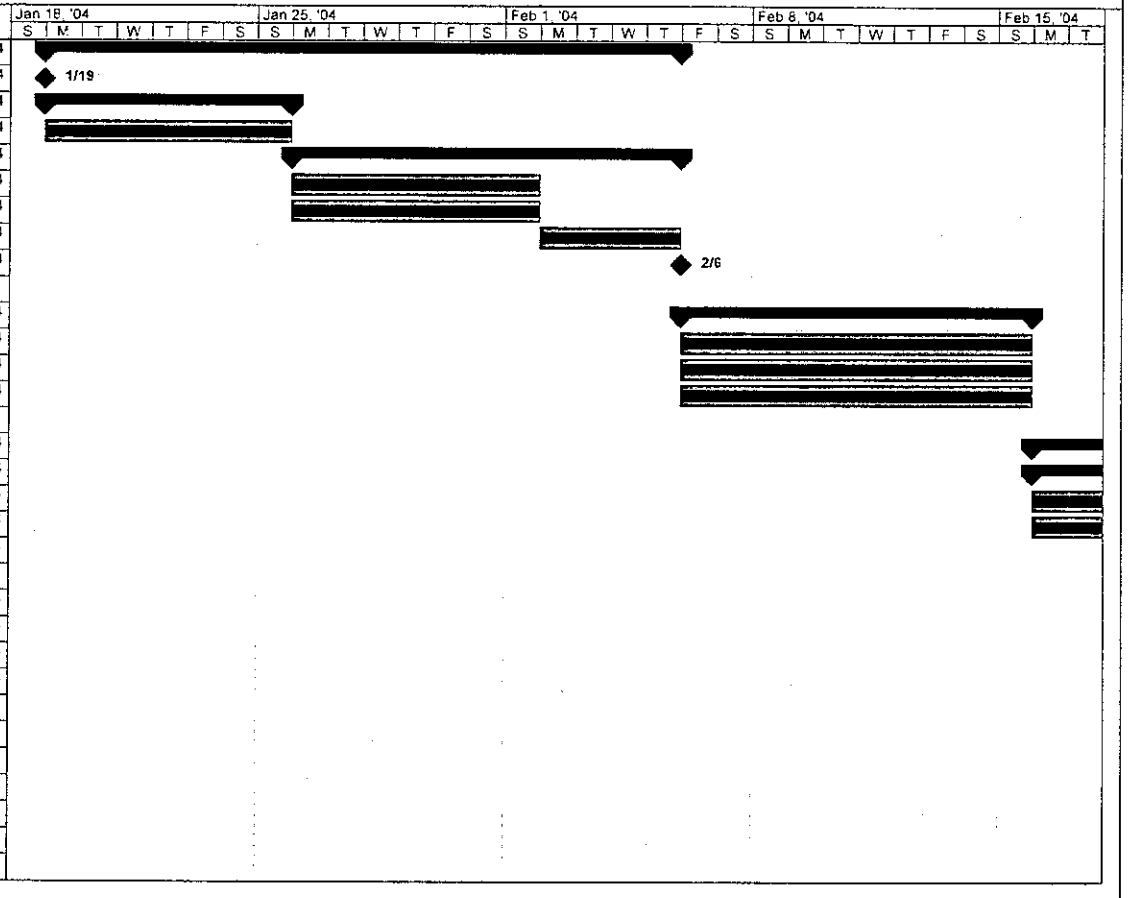
APPENDICES

APPENDIX 1

PROJECT SCHEDULE

Project Title: Log System for IT Support
FYP Semester Jan 2004

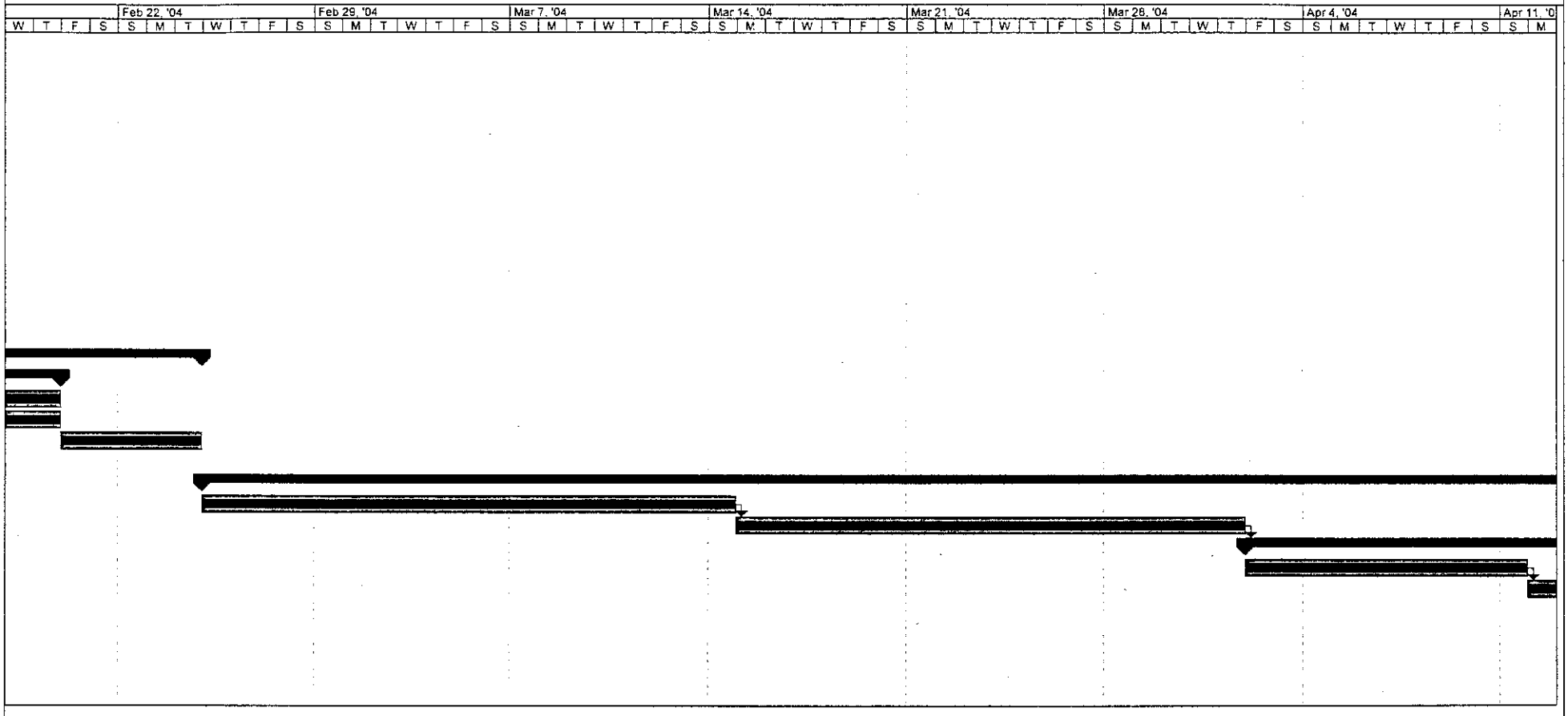
ID		Task Name	Duration	Start	Finish
1	✓	**Phase 1 : PLANNING**	**14 days**	**Mon 1/19/04**	**Fri 2/6/04**
2	✓	FYP title approval	0 days	Mon 1/19/04	Mon 1/19/04
3	✓	**Fact finding & info gathering process**	**5 days**	**Mon 1/19/04**	**Sun 1/25/04**
4	✓	- Questionnaire, internet surfing, study the san	5 days	Mon 1/19/04	Sun 1/25/04
5	✓	**Preliminary study**	**9 days**	**Mon 1/26/04**	**Thu 2/5/04**
6	✓	- understand problem & opportunity	5 days	Mon 1/26/04	Sun 2/1/04
7	✓	- define the project scope & constraint	5 days	Mon 1/26/04	Sun 2/1/04
8	✓	- determine the feasibility	4 days	Mon 2/2/04	Thu 2/5/04
9	✓	Preliminary report submission	0 days	Fri 2/6/04	Fri 2/6/04
10					
11	✓	**Phase 2 : ANALYSIS**	**6 days**	**Fri 2/6/04**	**Sun 2/15/04**
12	✓	Requirement modelling	6 days	Fri 2/6/04	Sun 2/15/04
13	✓	Data & process modelling	6 days	Fri 2/6/04	Sun 2/15/04
14	✓	Object modelling	6 days	Fri 2/6/04	Sun 2/15/04
15					
16	✓	**Phase 3 : DESIGN**	**7 days**	**Mon 2/16/04**	**Tue 2/24/04**
17	✓	**System design**	**4 days**	**Mon 2/16/04**	**Thu 2/19/04**
18	✓	- user interface design	4 days	Mon 2/16/04	Thu 2/19/04
19	✓	- input & output design	4 days	Mon 2/16/04	Thu 2/19/04
20	✓	Data design	3 days	Fri 2/20/04	Tue 2/24/04
21					
22		**Phase 4 : PROTOTYPING & TESTING**	**43 days**	**Wed 2/25/04**	**Sun 4/25/04**
23	✓	Prototyping Phase I	13 days	Wed 2/25/04	Sun 3/14/04
24	✓	Prototyping Phase II	14 days	Mon 3/15/04	Thu 4/1/04
25	✓	**System testing**	**11 days**	**Fri 4/2/04**	**Sun 4/18/04**
26	✓	- developer testing	6 days	Fri 4/2/04	Sun 4/11/04
27	✓	- user testing	5 days	Mon 4/12/04	Sun 4/18/04
28		Final review	5 days	Mon 4/19/04	Sun 4/25/04
29					
30		**Phase 5 : FYP PRESENTATION**	**29 days**	**Tue 4/27/04**	**Sat 6/5/04**
31		Oral presentation	4 days	Tue 4/27/04	Sat 5/1/04
32		Project dissertion submission	4 days	Tue 6/1/04	Sat 6/5/04



Project: FYP Log System
Date: Fri 4/16/04

Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone

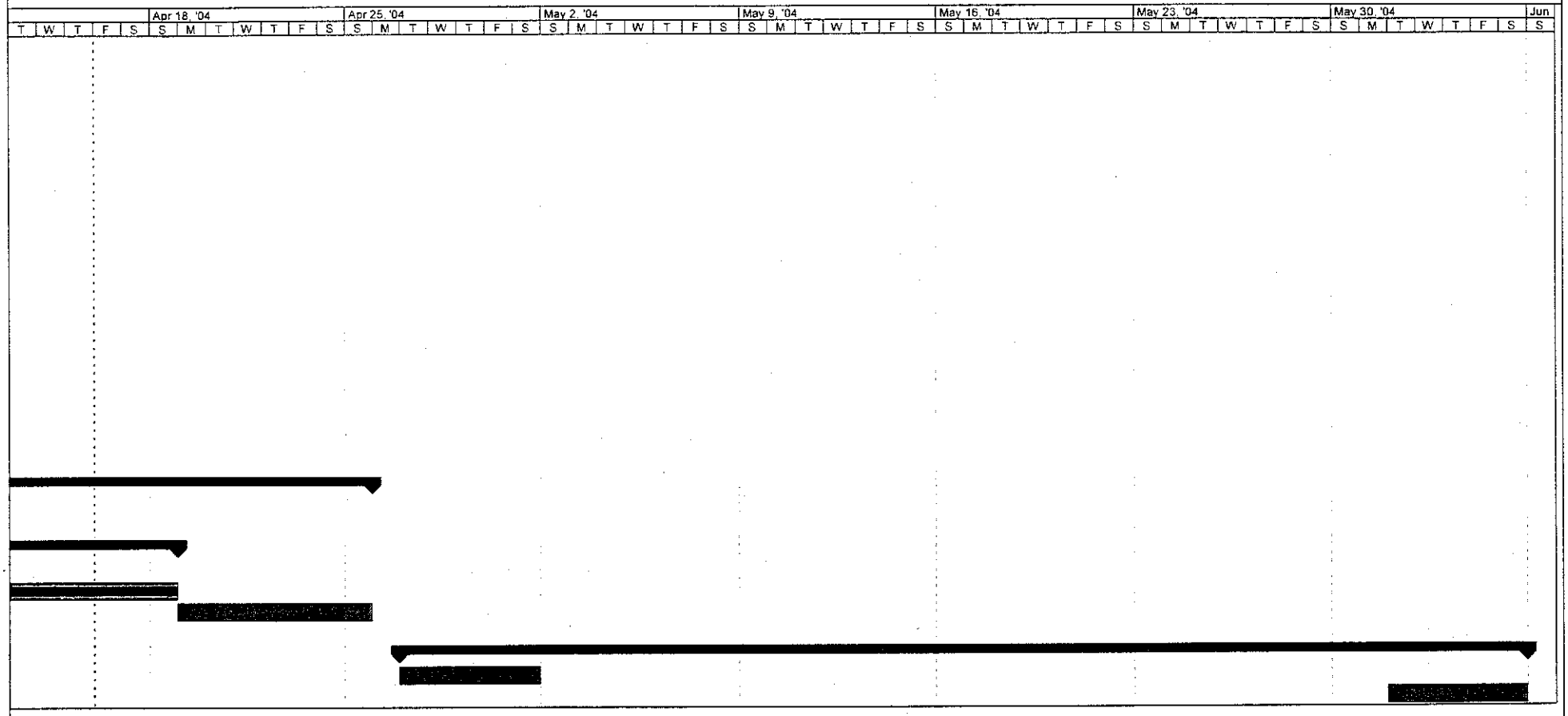
Project Title: Log System for IT Support
FYP Semester Jan 2004



Project: FYP Log System
Date: Fri 4/16/04

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

Project Title: Log System for IT Support
FYP Semester Jan 2004



Project: FYP Log System
Date: Fri 4/16/04

Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone

APPENDIX 2

SYSTEM REQUIREMENT CHECKLIST

System Requirement Checklist

No	Features	Checklist
1	central point to control, track and manage the whole support operation	
2	stores all information, reports, complaint submit on a problem in the one central system	
3	can assign the right staff in right specialize support area, for action taken to each complaint received	
4	can process, check and update on the tasks completion and status	
5	have built in notification to automatically notify assigned staff for any new task assigned to them, any prompt notification or alert attention	
6	can evaluate quality of service performance and management	
7	can generate statistical and graphical reports (for report comparison in timely manner)	
8	allow management access and monitor the performance of the IT services delivered heading in the right direction	
9	can access users feedback, satisfaction and level of users' understanding	
10	repository for everyone to find solutions to problems	
11	educate users with IT support knowledge (through eInfo Section, FAQ Section etc)	
12	replace paper-based report and phone call report, with 24x7 online reporting capabilities	
13	update status of report/ complaint submitted previously	

APPENDIX 3

QUESTIONNAIRE FOR REQUIREMENT ANALYSIS

Questionnaire during Analysis Phase (SAMPLE)

Dear valued users,
Please take a moment to fill out this questionnaire about the IT SUPPORT REPORTING SYSTEM PREFERENCE METHOD. Thank you for your cooperation. Your feedback is important to us!

Q1. Do you know about any services relate to IT SUPPORT REPORTING SYSTEM?
_____ YES _____ NO

Q2. Please tick [/] any of the IT SUPPORT REPORTING method that you know?

Through Paper Form Based	Through Telephone	Through Visiting the Support Center	Through sending complaint letter	Through Online System (Internet)	Don't know all

For Question 3 – 8, please put [x] your preference.

		YES	NO
Q3.	Do you think that it is important to report any unsolved IT Problem to the IT Support Provider?		
Q4.	Do you prefer to solve your IT problem on your own?		
Q5.	Do you prefer to solve your IT problem by IT Support Provider?		
Q6.	Do you think that all your IT problem need to be solved urgent because it may delayed all the associated task?		
Q7.	Do you agree that IT Support Reporting System through "ONLINE" is more convenient and properly managed?		
Q8.	Do you have registered or experienced in using any IT Support Reporting System through "ONLINE"?		

For Question 9 – 12, please circle for your preference.

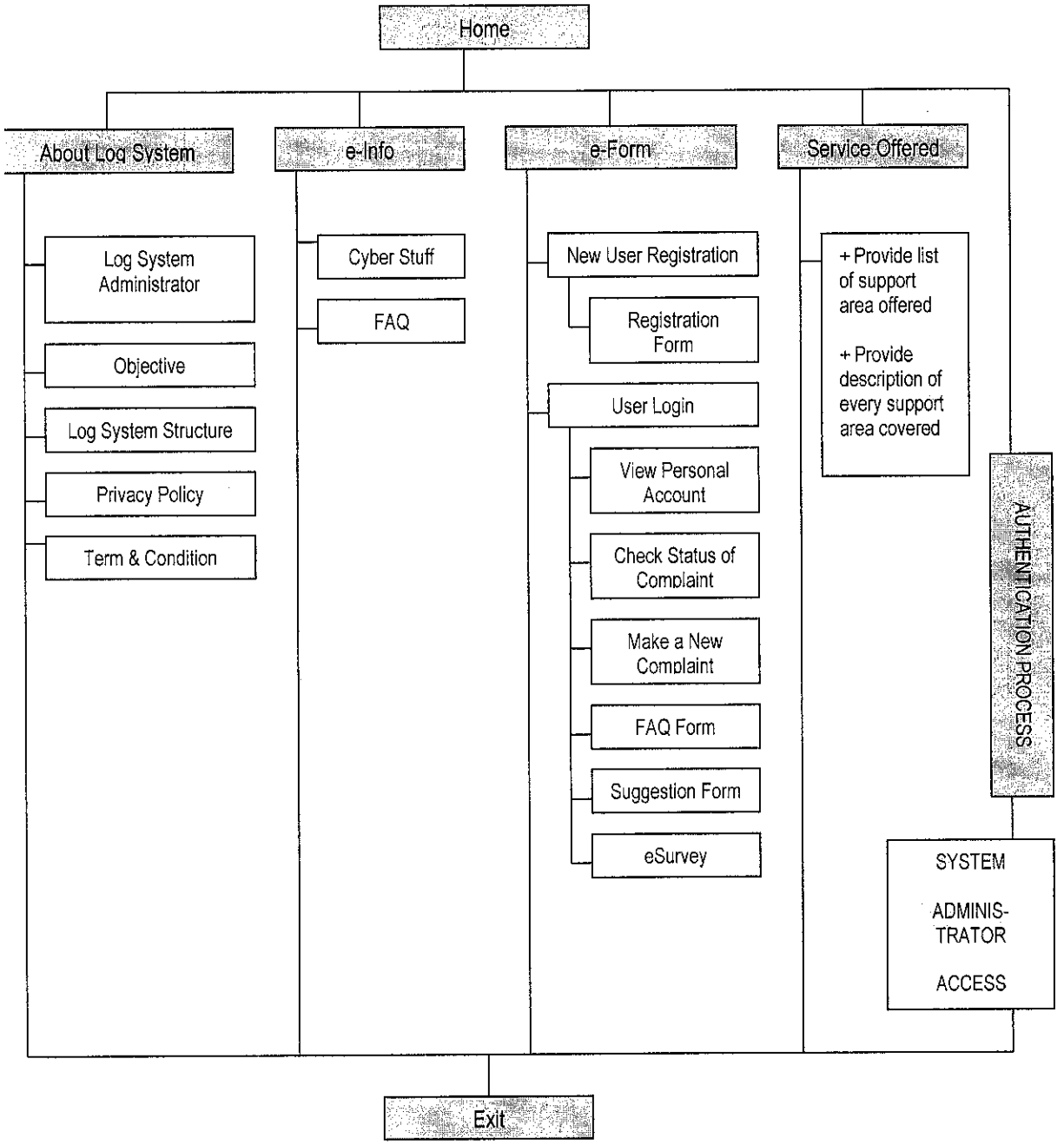
		Conventional Reporting System (Paper based, Telephone call, Visit to the Support Center)	Online Reporting System	No Comment
Q9.	If you face with IT problem, which reporting method you prefer?	1	2	3
Q10.	Which method that you feel most convenient?	1	2	3
Q11.	Which method that you think can give you efficient feedback and quick feedback process?	1	2	3
Q12.	In which method that you find it include all the knowledgeable package, customer info and all the relevant access to IT Support stuff?	1	2	3

- Thank You -

APPENDIX 4

LOG SYSTEM FOR IT SUPPORT
FDD PUBLIC ACCESS

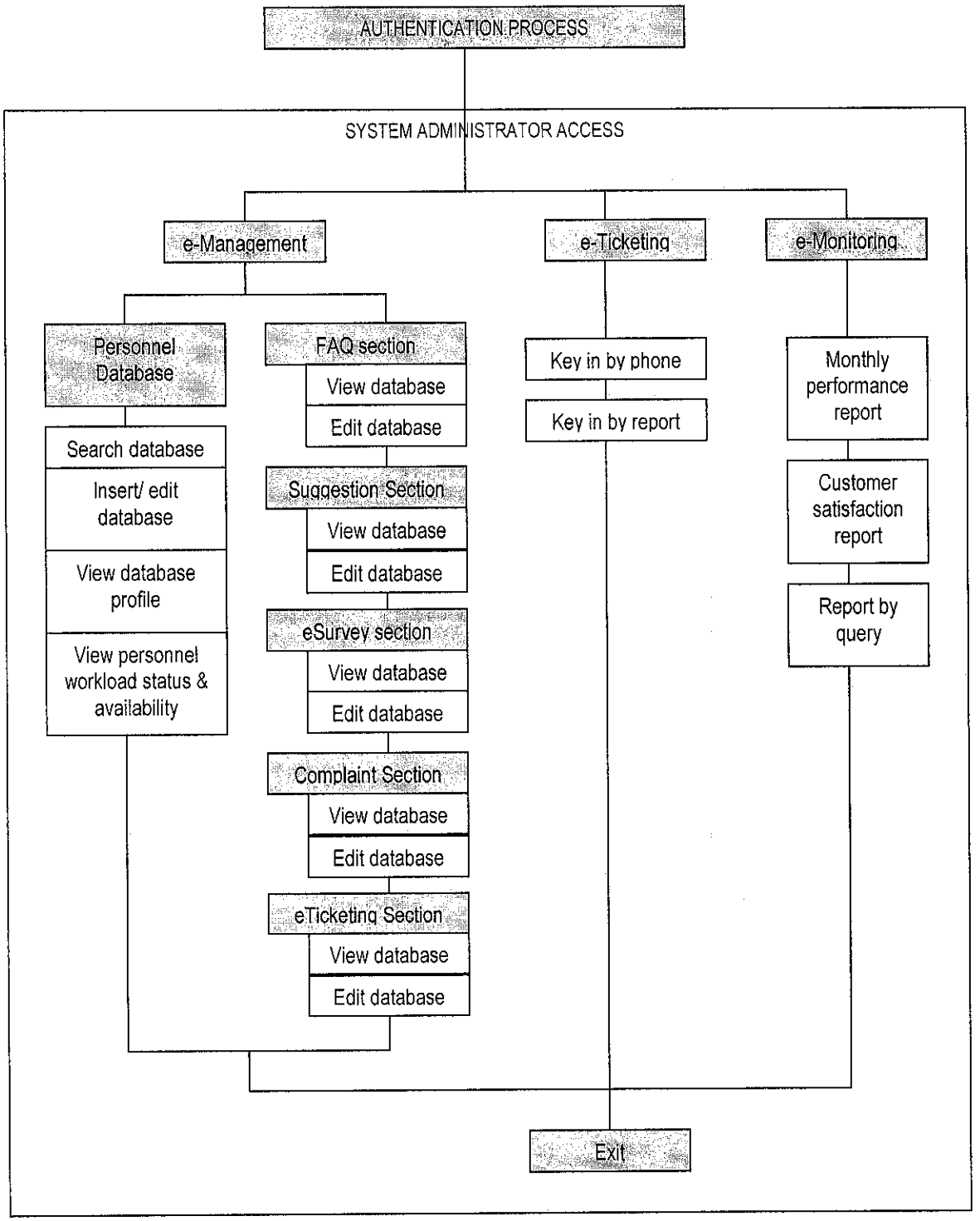
Log System for IT Support FDD Public Access



APPENDIX 5

LOG SYSTEM FOR IT SUPPORT
FDD AUTHORIZED SYSTEM ADMINISTRATOR

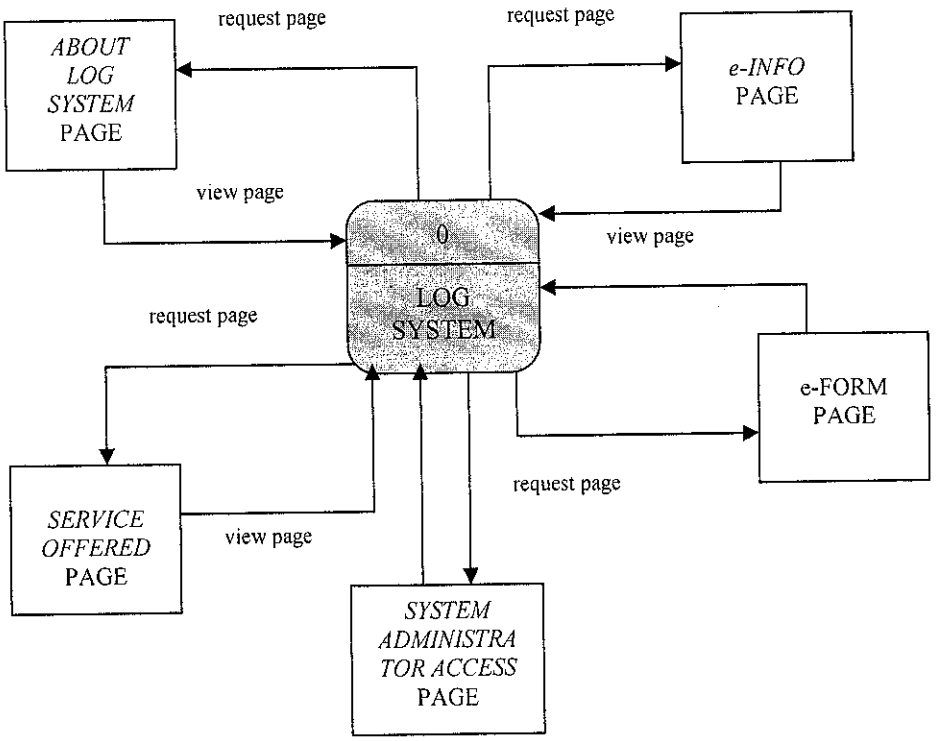
Log System for IT Support FDD Authorized System Administrator



APPENDIX 6

LOG SYSTEM FOR IT SUPPORT
CONTEXT DIAGRAM

Log System for IT Support Context Diagram



Description

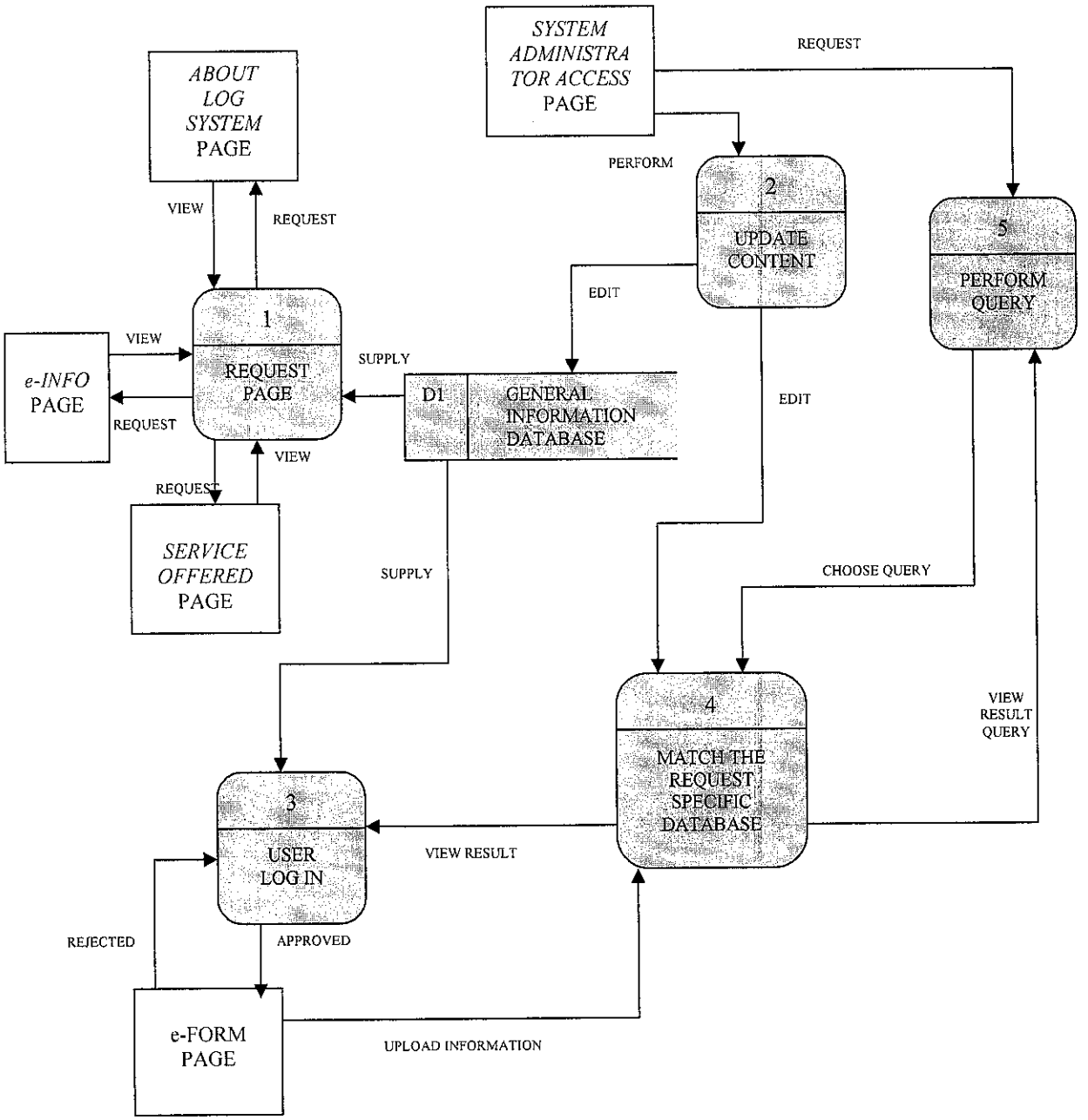
This context diagram visualized the basic and most common level of information system flow within Log System.

APPENDIX 7

LOG SYSTEM FOR IT SUPPORT

DIAGRAM 0

Log System for IT Support Diagram 0



Description

This diagram 0 visualized a step-advance in zooming in the previous Log System context diagram.

APPENDIX 8

LOG SYSTEM FOR IT SUPPORT
CHILD DIAGRAM

Diagram 1 DFD for 'Request' Page

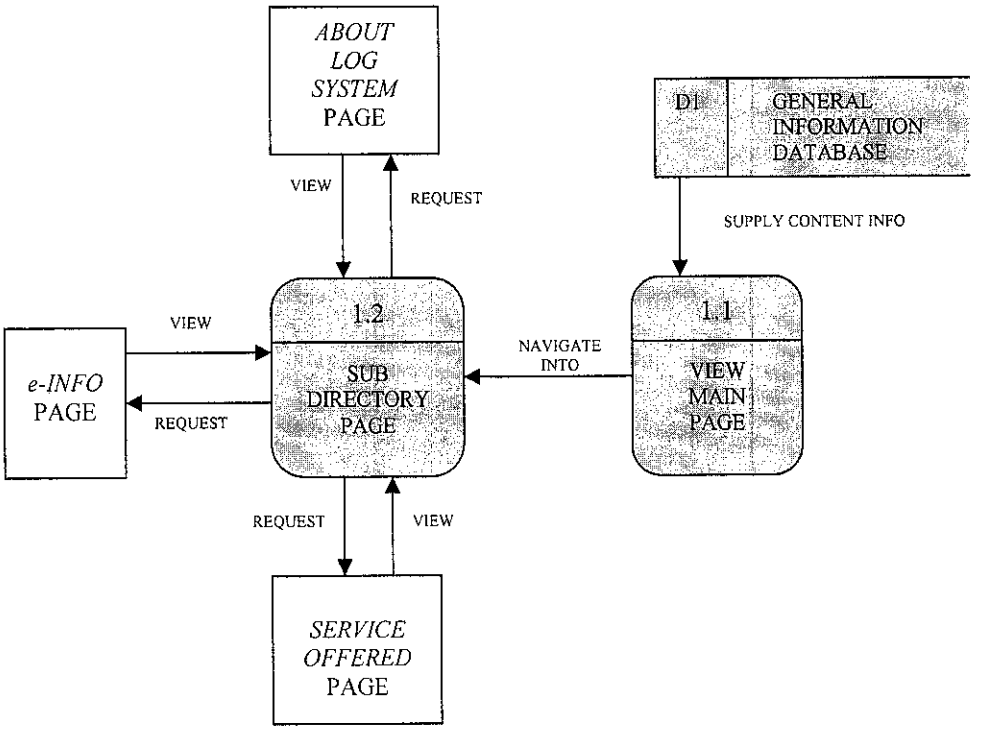


Diagram 2 DFD for 'Update Content' Page

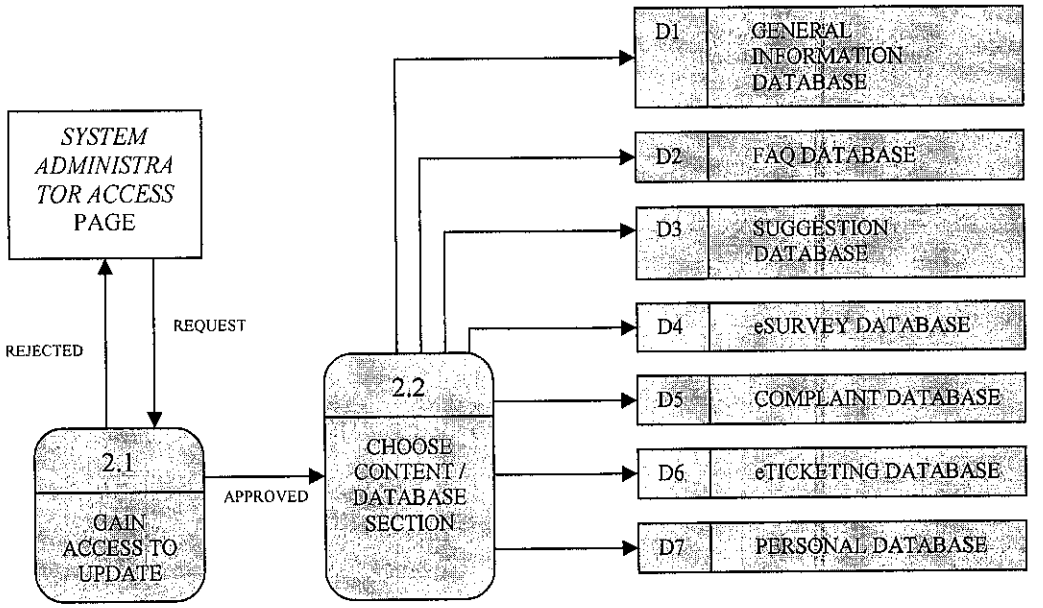


Diagram 3 DFD for 'Perform Query' Page

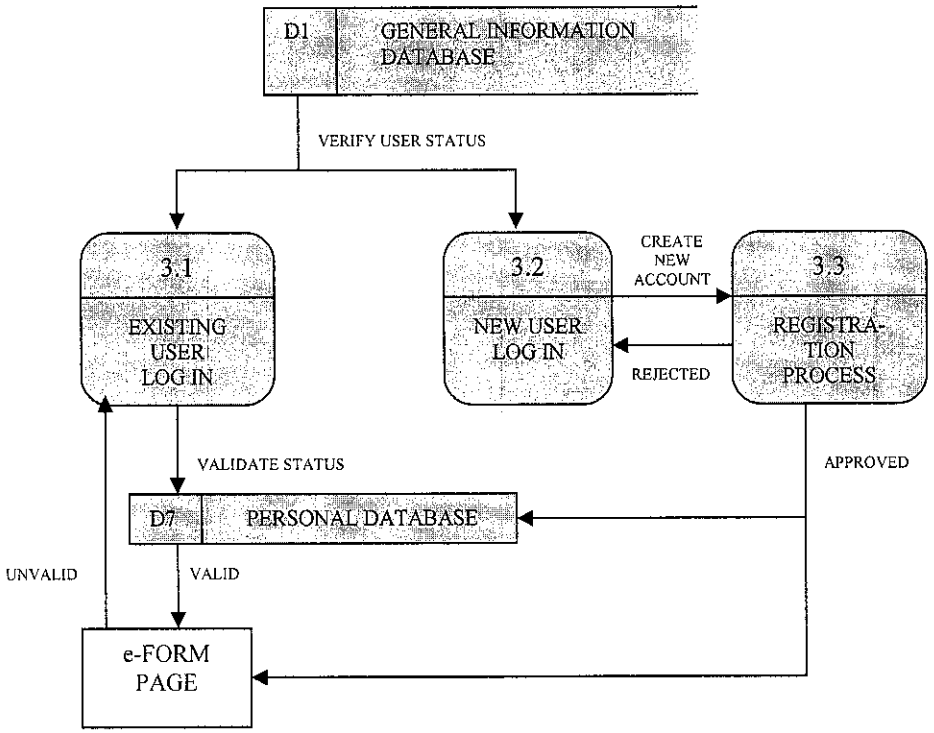


Diagram 4 DFD for 'Match the Requested Database' Page

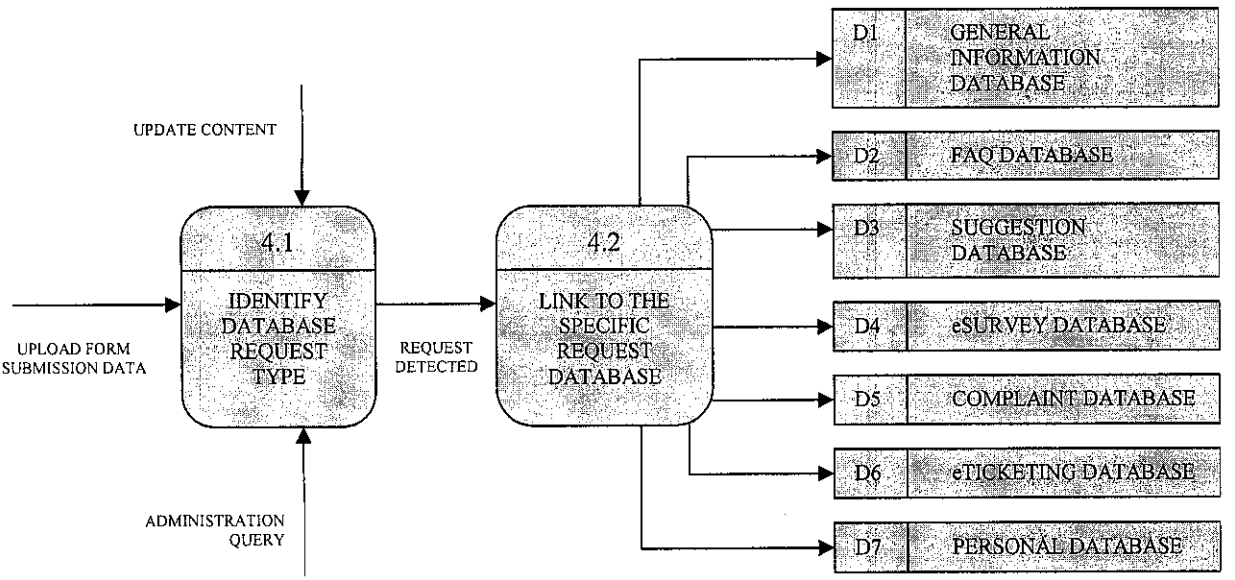
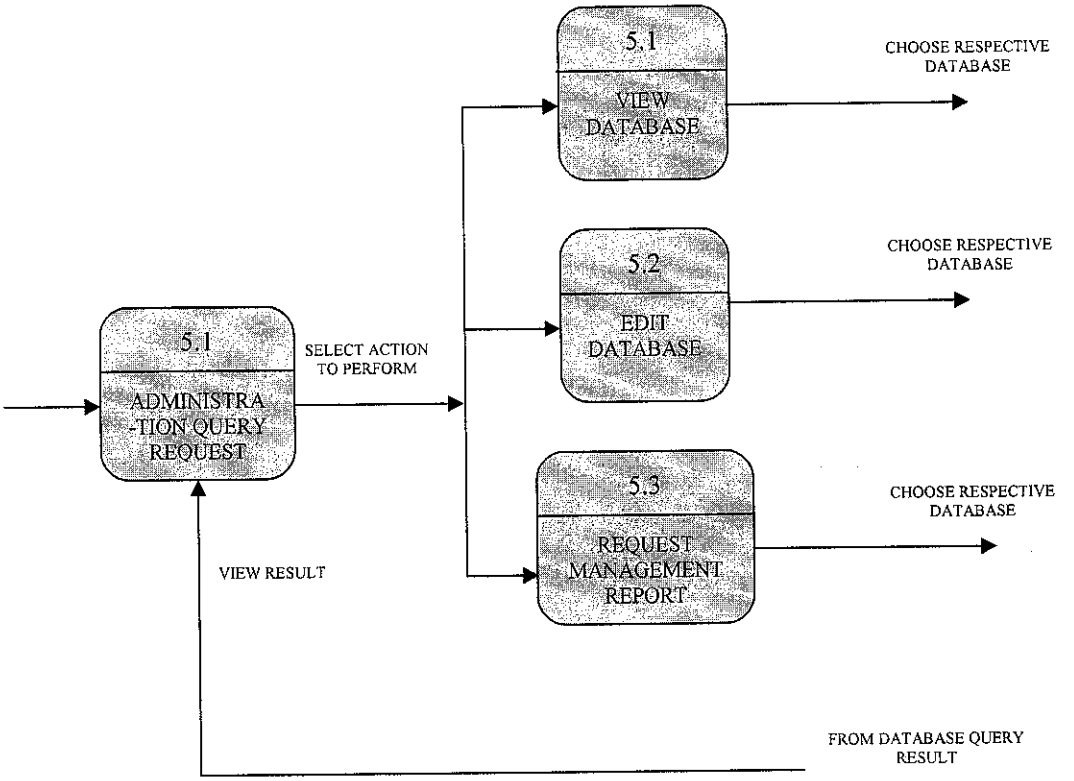


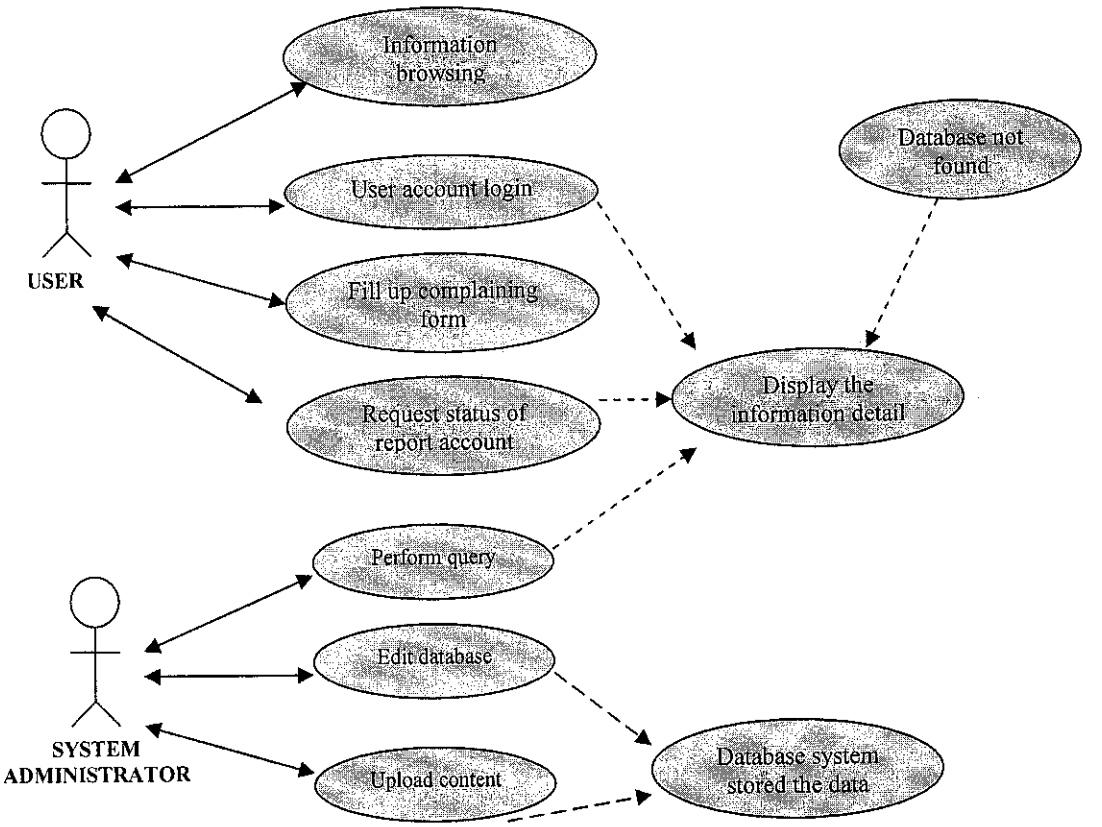
Diagram 5 DFD for 'User Login' Page



APPENDIX 9

LOG SYSTEM FOR IT SUPPORT
USE CASE DIAGRAM

Log System for IT Support Use Case Diagram



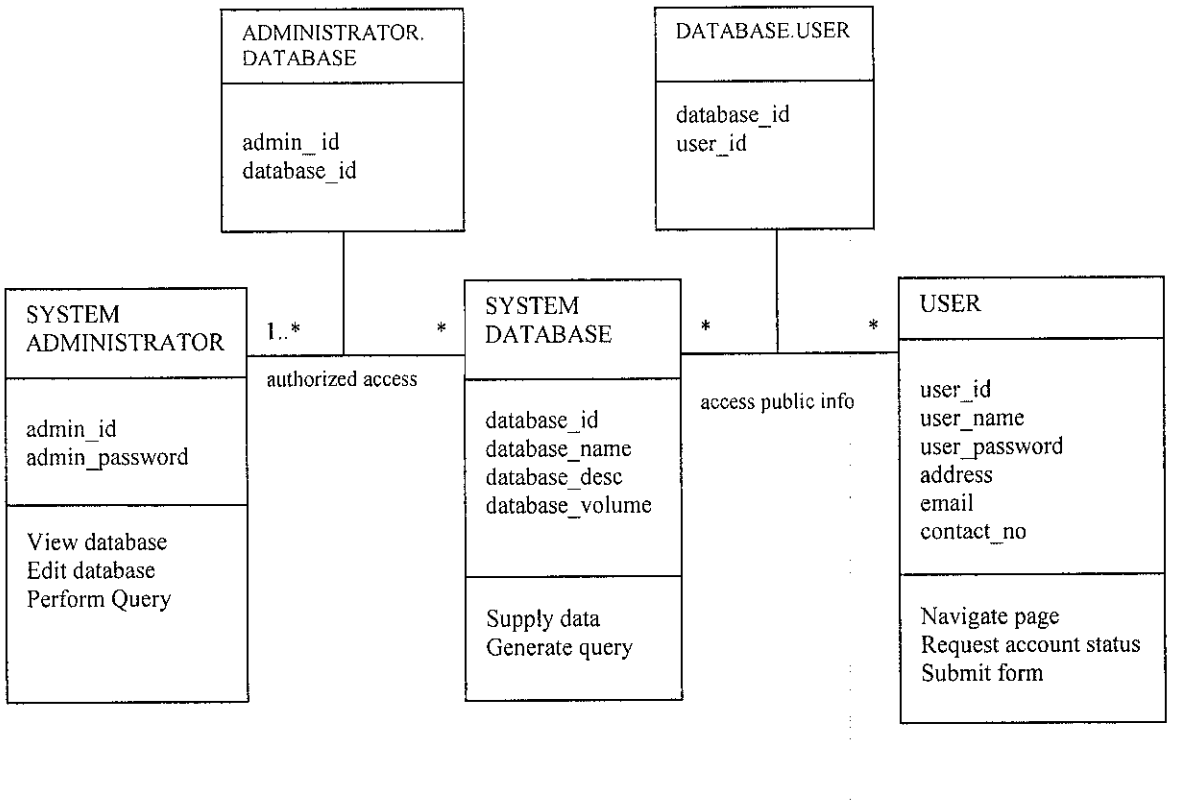
Description

Type	Use Case Name	Description
Use case	Information browsing	User browse the pages in Log System, look for information provided; read FAQ section, support guidance, learning guide and other knowledgeable material posted in the web. This access was given to public.
Use case	User account login	User login into the account to make report, or update/ see the progress of his account; whether his complaint reported previously had been satisfied by the support provider.
Use case	Fill-up complaining form	User make a new complaint by fill up the complaining form. Users also can make suggestion, fill up questionnaire and do the customer-satisfaction survey.
Use case	Request status of report account	User request and view the report of his previous complaint submitted to the support provider.
Use case	Perform query	System administrator can perform query to analysis the management report, total number of customer, detail of complaint done, number of support services satisfied and many more.
Use case	Edit database	System administrator can edit the users' database, services' database etc.
Use case	Upload content	System administrator can upload the content, post any announcement, text-based information on the web to be read by public.
Used use case	Display the information detail	System will display all the information requested by users or system administrator, after retrieve the information from the database.
Used use case	Database system stored the data	System will stored all the data submitted by system administrator (content upload, database editing), into the database and keep it current.
Extended use case	Database not found	System will prompt, in the case of data search or requested not accessible or not exist in the database.

APPENDIX 10

LOG SYSTEM FOR IT SUPPORT
CLASS DIAGRAM

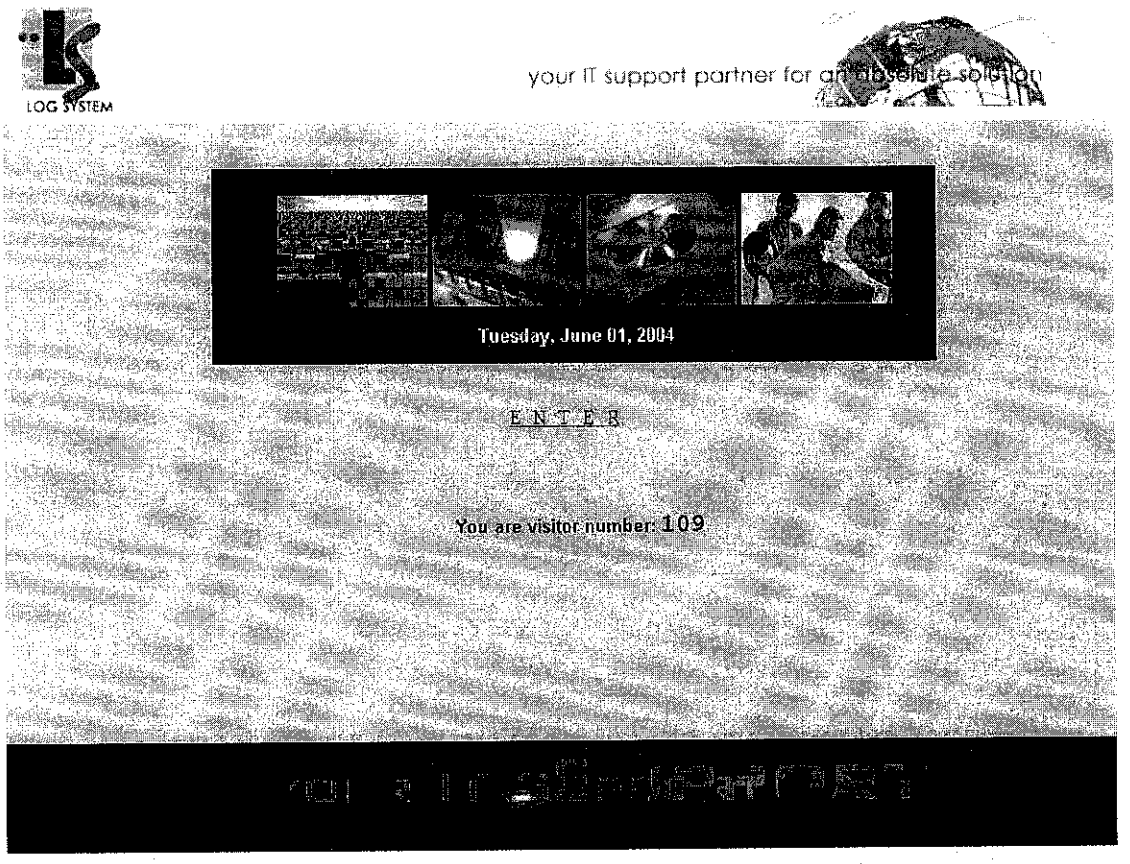
Log System for IT Support Class Diagram



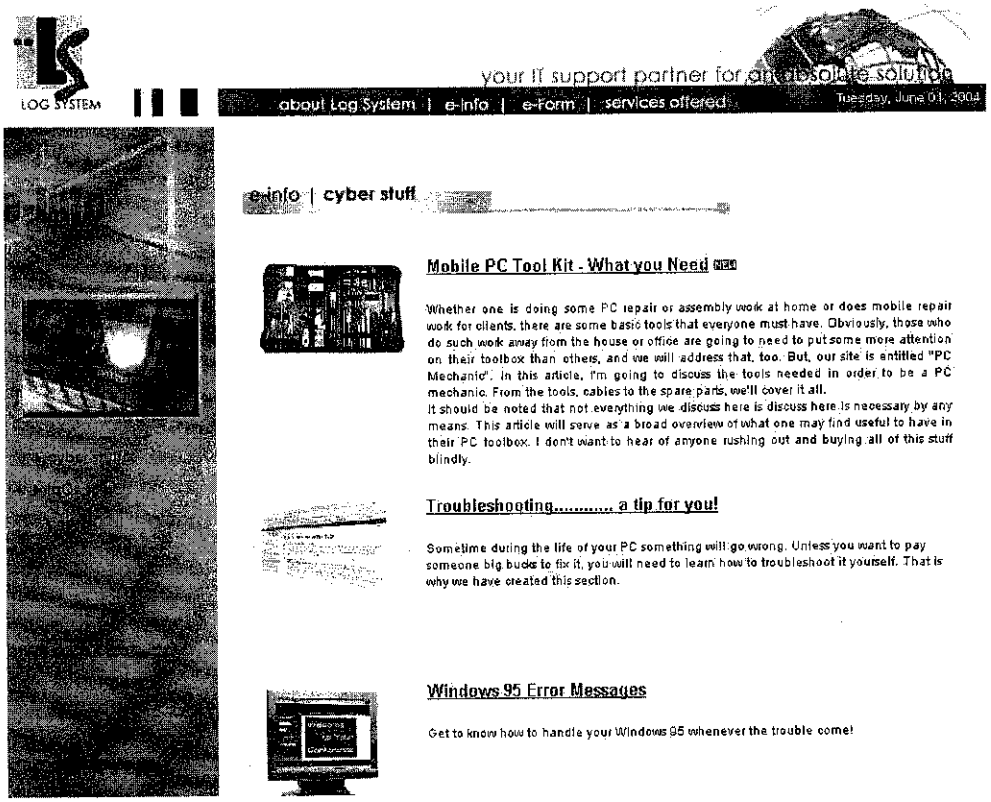
APPENDIX 11

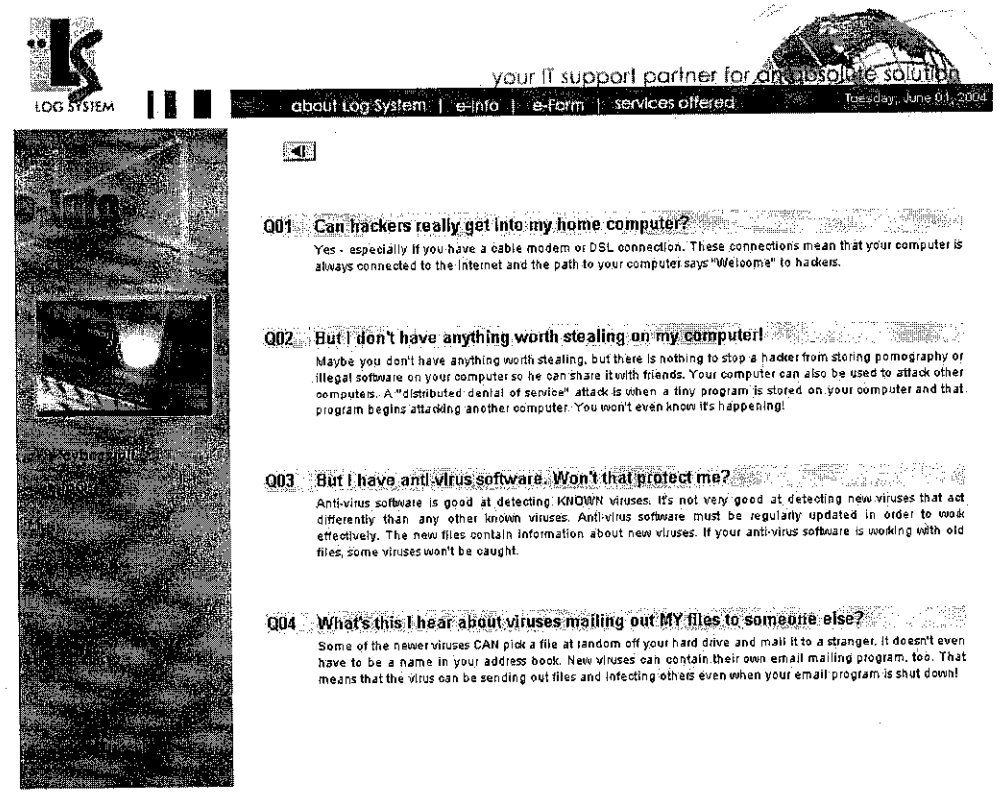
USER INTERFACE DESIGN

User interface design

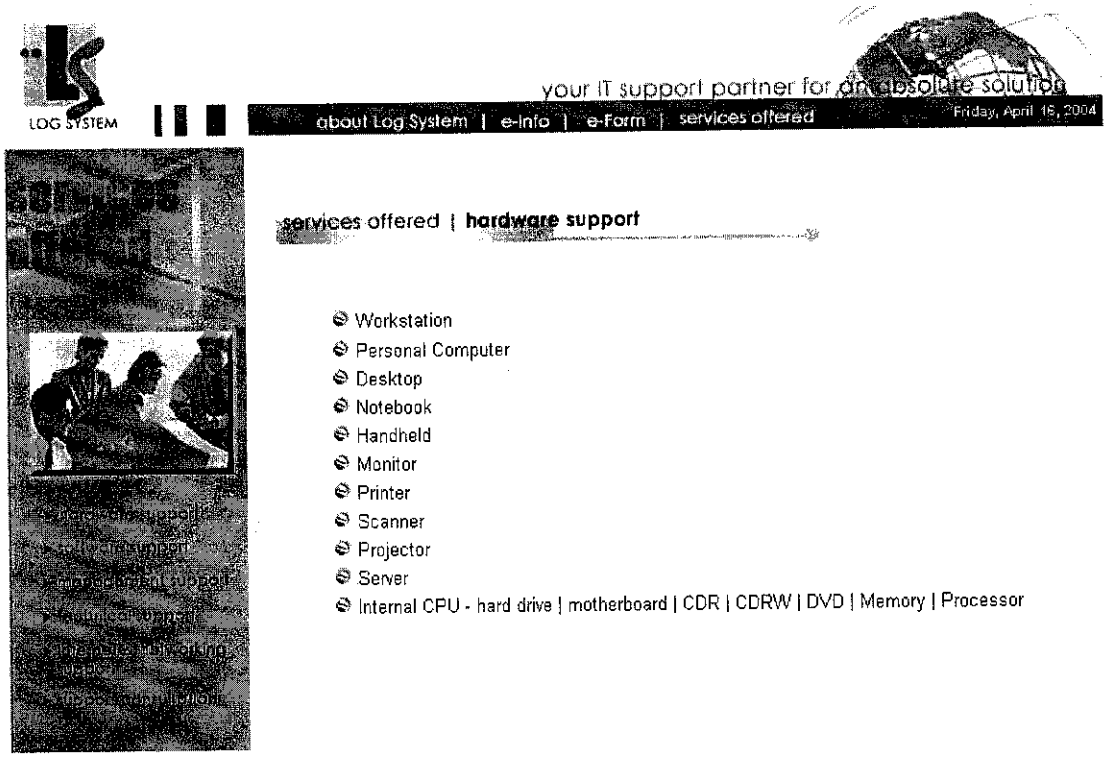


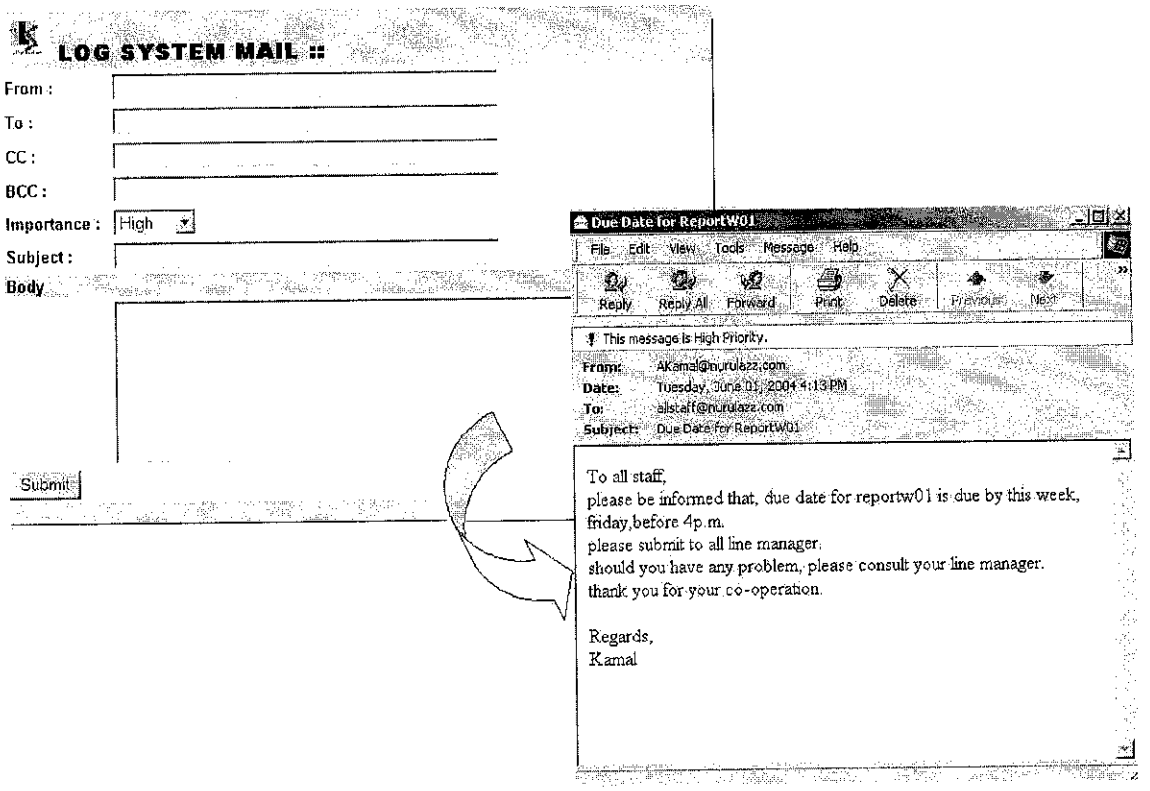
User interface design



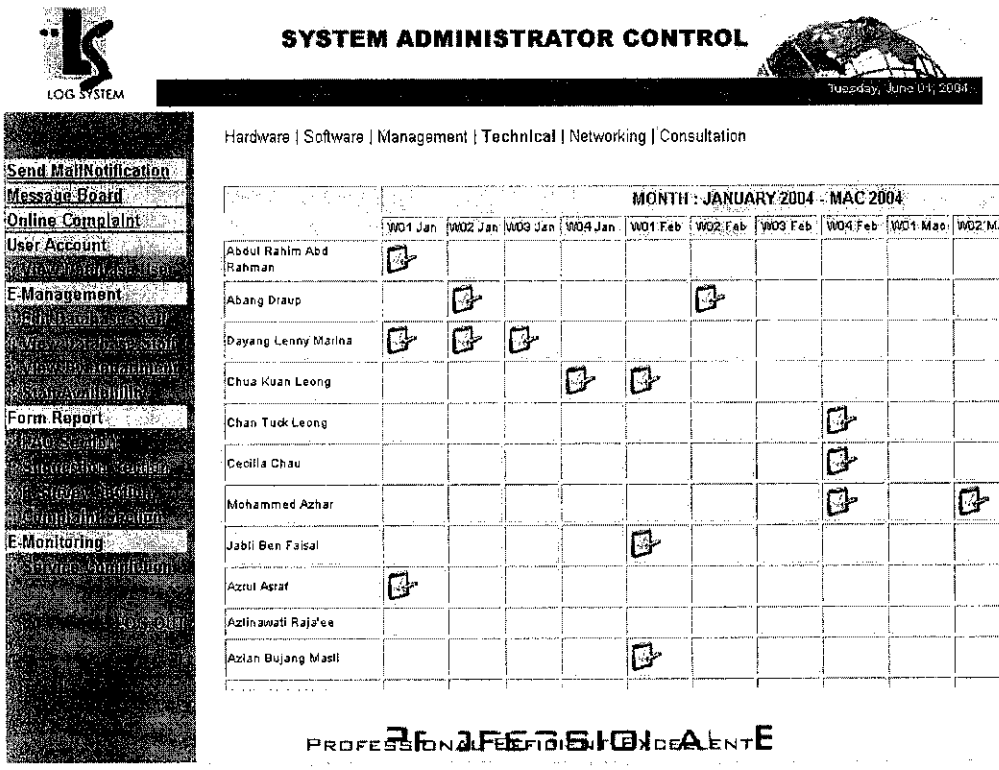


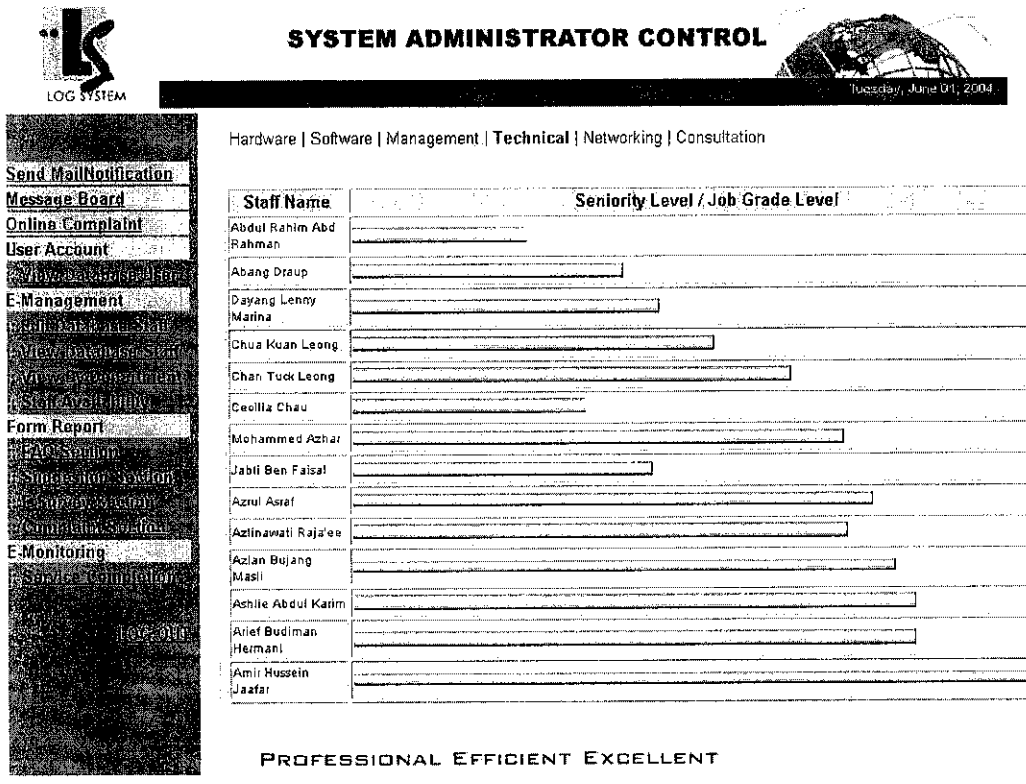
User interface design





User interface design

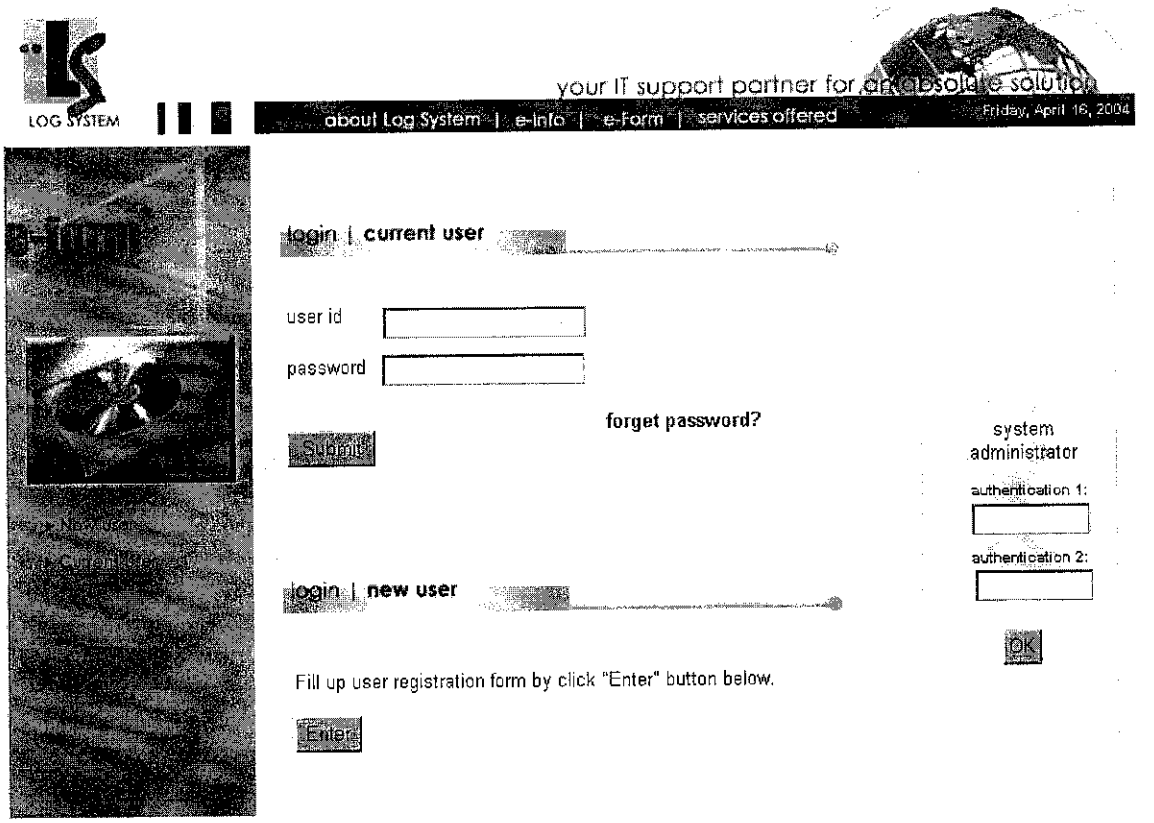




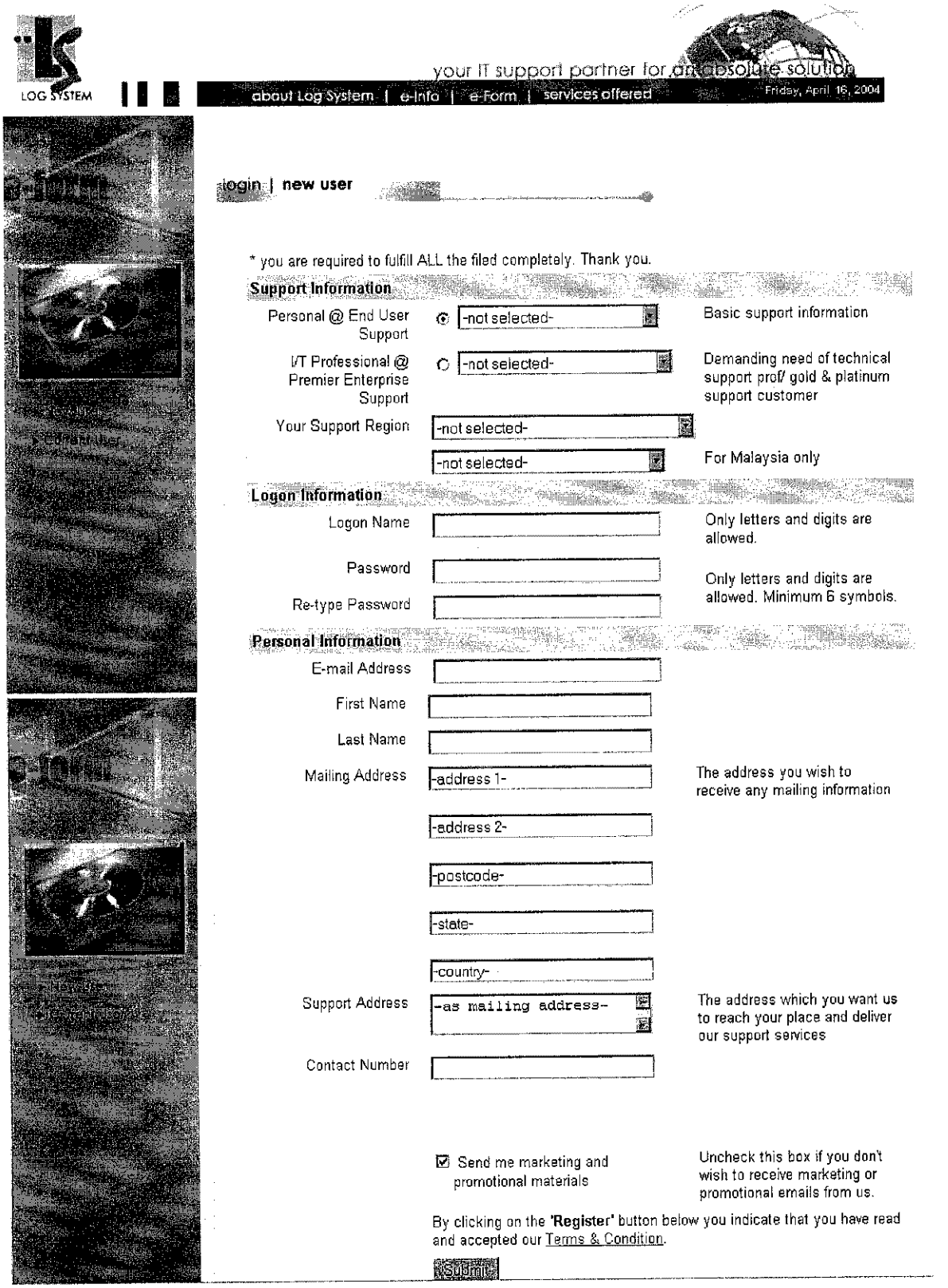
APPENDIX 12

INPUT DESIGN

Input design for 'Login' Page



Input design for 'User Registration Form' Page



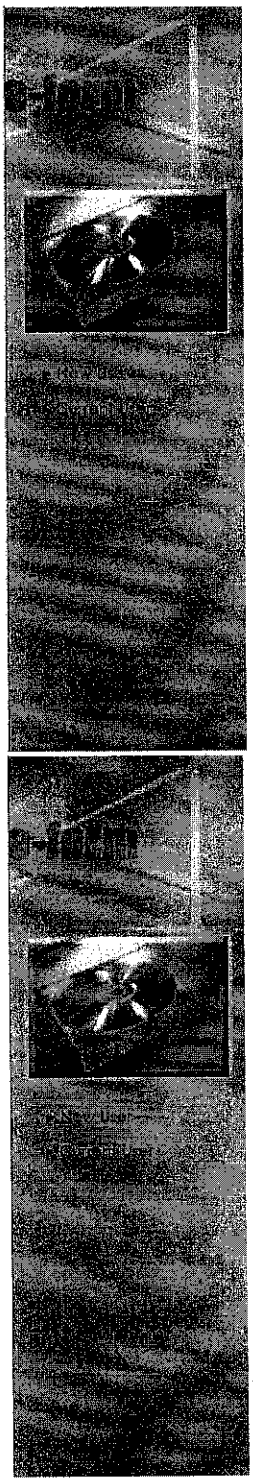
Input design for 'Complaint/ Report Form' Page

LOG SYSTEM

your IT support partner for an absolute solution

about Log System | e-Info | e-Form | services offered

Friday, April 18, 2004



e-form | form | new complaint form

complaint form for aishah ;

1. TYPE OF COMPLAINT

Please select the type of complaint you want us to give our services.

Hardware Support

- ☐ Workstation
- ☐ Personal Computer
- ☐ Desktop
- ☐ Notebook
- ☐ Handheld
- ☐ Monitor
- ☐ Printer
- ☐ Scanner
- ☐ Projector
- ☐ Server
- ☐ Internal CPU -please choose here-

Management Support

- ☐ Software Design
- ☐ Hardware Management
- ☐ Internet & Network Management
- ☐ System configuration
- ☐ System Trouble shooting
- ☐ Virus Management
- ☐ OS Configuration

-please choose here-

- ☐ Asset management

Software Support

- ☐ Software configuration
- ☐ Software trouble shooting
- ☐ Software installation
- ☐ Software corrupt

-please choose here-

Technical Support

- ☐ Software Design
- ☐ Hardware Design
- ☐ Internet & Network Design

Support Consultation

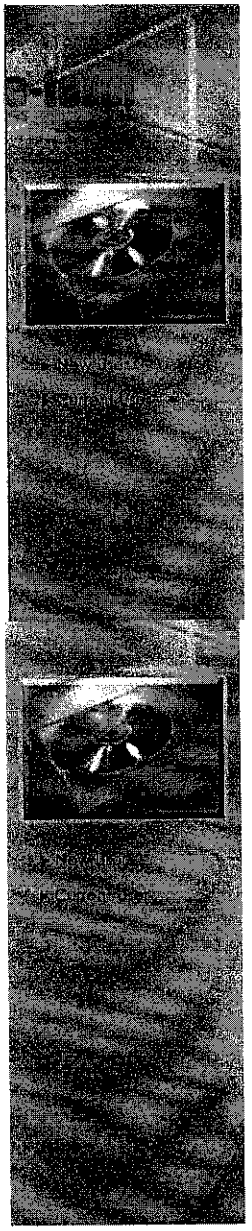
- ☐ Software Management Technique
- ☐ Hardware Management Technique
- ☐ Internet & Networking Mngmt Technique
- ☐ IT Office Management Technique

Internet and Networking Support

- ☐ Dial-up Access
- ☐ High Speed internet
- ☐ Wireless
- ☐ Cable
- ☐ Satellite
- ☐ Networking & Communication
- ☐ Network Configuration
- ☐ Network Trouble Shooting

2. ADDITIONAL INFORMATION

Please add if you had an additional complaint or anything that wasn't describe in the section above:



-additional comment-

3. LEVEL OF SUPPORT REQUEST

- ○ Urgent
- ○ Intermediate
- ○ Normal

4. CONTACT INFORMATION

If you had change the address of your pre-registered detail, please refill this section.If the information in the pre-registered remain the same, please ignore this section.

NEW ADDRESS:

-remain the same-

-not selected-

YOUR SUPPORT REGION:

-not selected-

For FINAL USER VALIDATION, kindly please re-enter your login ID below:

Reminder: If you enter the wrong Log In ID, your complaint form will NOT be processed.

Submit

APPENDIX 13

USER ACCEPTANCE TESTING CHECKLIST

USER ACCEPTANCE TESTING FORM

ASPECT	Very Bad	All Right	Excellent
1. OVERALL VIEW OF THE SYSTEM	1 2 3	4 5 6 7	8 9 10
2. SYSTEM FUNCTIONALITY	1 2 3	4 5 6 7	8 9 10
3. USER INTERFACE DESIGN	1 2 3	4 5 6 7	8 9 10
4. INFORMATION PROVIDED	1 2 3	4 5 6 7	8 9 10
5. NAVIGATION TIPS	1 2 3	4 5 6 7	8 9 10
6. USER FRIENDLINESS	1 2 3	4 5 6 7	8 9 10
7. INTERACTIVITY	1 2 3	4 5 6 7	8 9 10
8. SYSTEM CONTINUITY	1 2 3	4 5 6 7	8 9 10
9. SYSTEM SECURITY	1 2 3	4 5 6 7	8 9 10
10. INFORMATION QUERY PROVIDED	1 2 3	4 5 6 7	8 9 10

Additional Comment: